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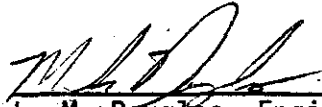
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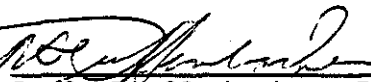
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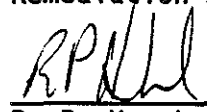
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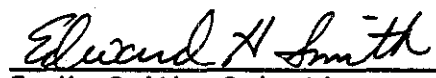
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## EXECUTIVE SUMMARY

This plan presents the timetables, responsible organizations, and methods required to comply with Washington Administrative Code (WAC) 173-360, *Underground Storage Tank (UST) Regulations*.<sup>1</sup> These rules were adopted November 28, 1990, and became effective December 29, 1990. This plan addresses only regulated UST systems that contain nonradioactive material.

Prior to the state UST regulations becoming effective, UST systems were regulated under Title 40 Code of Federal Regulations 280 and 281.<sup>2</sup> The Washington State Department of Ecology (Ecology) is directed by the Revised Code of Washington, Chapter 90.76,<sup>3</sup> to establish an underground storage tank program designed, operated, and enforced in a manner that, at a minimum, meets the requirements for delegation of the federal regulations. These rules are designed to allow for delegation of federal UST authority to the state. Their purpose is to protect human health and the environment from the threat of leaking UST systems containing petroleum and other regulated substances by:

- Closing old tanks
- Detecting and remediating tank leaks and spills
- Establishing stringent standards for new tanks
- Upgrading existing tanks to new-tank standards.

---

<sup>1</sup>Washington State Department of Ecology, Washington Administrative Code 173-360, *Underground Storage Tank Regulations*, Olympia, Washington, 1990.

<sup>2</sup>Title 40 Code of Federal Regulations 280 and 281, U.S. Government Printing Office, Washington, D.C., July 1, 1990.

<sup>3</sup>*Revised Code of Washington*, Chapter 90.76, State of Washington, Olympia, Washington.

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Over 60 UST systems at the Hanford Site are currently affected by WAC 173-360. These systems are categorized based on the age, use, contents, and construction of the tank which dictates the extent by which they are affected by the regulations. Within the past three years, 38 regulated Hanford UST systems have been removed from the ground as a result of the earlier federally mandated program as well as under the current state regulations.

Of the remaining regulated tanks, 17 are permanently out of service and will be closed by removal when funds are made available. This number may increase as additional UST systems are reported to the Decommissioning & RCRA Closure Program Office and/or if additional abandoned tanks are discovered. Ten active UST systems are currently employing regulated methods of release detection (inventory control) due to their age--active tanks installed prior to 1974 and emergency generator systems installed prior to 1965. This is a result of the phase in release detection requirements imposed by both the federal and state UST regulations. Several other tank groupings exist based on the age and use of the tank (Section 2.3) with succeeding annual compliance dates for leak detection capabilities. All regulated Hanford Site UST systems must meet new tank standards by December 1998 or undergo permanent closure. Westinghouse Hanford Company (Westinghouse Hanford) has responsibility for implementing the tank removal program and managing the release detection program on the Hanford Site.

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All but two of the UST systems at the Hanford Site are operated by Westinghouse Hanford. Kaiser Engineers Hanford and Battelle Pacific Northwest Laboratory each operate one UST system.

Specific plans to remove the permanently closed/abandoned tanks and leak detection for the remaining tanks are presented as well as a brief summary of the UST notification process. Estimated costs for tank removal and tightness testing are provided as a reference to assist in budget planning.

Alternatives to achieve regulatory compliance are discussed, and actions necessary for cleanup in the event of a leak or spill are stated.

The following matrix chart displays the general responsibilities and interfaces between RL UST owners, WHC system operators, the RL UST Program, and the WHC UST Program.

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UST PROGRAM MATRIX							
RESPONSIBLE PARTY	Sect. 3.0 REPORTING (1)	Sect. 3.1 PERMITTING (2)	Sect. 2.1 DATABASE MANAGEMENT (3)	Sect. 2.5 RELEASE DETECTION (4)	Sect. 2.5 TANK TIGHTNESS TESTING (5)	Sect. 2.6 TANK REMOVAL (6)	Sect. 2.6 SITE REMEDIATION (7)
RL TANK OWNER	A	A, F	I	I	A, F	A, F	A, F
SYSTEM OPERATOR	A	I	X	X	X, R	X, R	X, R
RL UST PROGRAM	X	X	I	I	I	A	A
WHC UST PROGRAM	X	X	X	X	X	X	X

A = APPROVAL

F = FUNDING

I = INFORMATION PROVIDED

R = REQUEST BUDGET

X = ACTION REQUIRED

xi

- (1) RL and WHC UST Programs will transmit reporting documents to Ecology once approval is received from the RL Tank Owner.
- (2) RL Tank Owners are required to budget for the annual permit fee of \$75 per active tank. RL and WHC UST Programs will submit the permits to Ecology.
- (3) System operator, i.e., WHC Operations Support Services, maintains release detection records and updates the tank status on an annual basis. WHC UST Program maintains a file of all tanks and their status as reported by the system operator.
- (4) System Operator is responsible for monitoring/maintaining release detection methods in accordance with WAC 173-360-345. WHC UST Program arranges for Annual Tightness Testing.
- (5) WHC Programs notifies System Operators when tanks must be tightness tested and the schedule. RL Tank Owners are required to budget for the Annual Tightness Testing (approximately \$700 per tank).
- (6) The system operator along with the RL Tank Owner determine when a tank is to be taken out of service/removed. The RL Tank Owners are required to budget for removal/disposal.
- (7) The RL Tank Owner is required to fund the site remediation if required.

Underground Storage Tank Matrix

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## UNDERGROUND STORAGE TANK WEEKLY SCHEDULE REPORT

Excavation/Lifting/Sampling/Leak Detection/BackfillDATE: FEB.28,1990

TANK NUMBER	ORIGINAL TANK CONTENT	SCHEDULED DATES			ACTUAL DATES				
		EXCAVATION	LIFT	SOIL SAMPLED	LIFT	SAMPLED	LEAK DETECTION		BACKFILLED
							FIELD	LAB	
130-K-1	Regular Gasoline*	7/10 - 7/14	7/18	7/19	7/26	7/28	NO	NO	8/23*
130-K-2	Used/Waste Oil	7/10 - 7/14	7/18	7/19	7/26	7/28	NO	NO	8/23*
130-D-1	Regular Gasoline*	7/10 - 7/14	7/20	7/24	7/20	7/20	YES	YES	8/21
622-R	Regular Gasoline*	7/20 - 7/25	7/27	7/28	8/10	8/10	YES*	NO	8/17
600-1	Regular Gasoline*	7/26 - 8/1	8/2	8/3	8/7	8/8	NO	NO	8/17
600-2	Unleaded Gasoline	7/26 - 8/1	8/2	8/3	8/7	8/8	NO	NO	8/17
600-3	Diesel Fuel	7/26 - 8/1	8/2	8/3	8/15	8/15	NO	NO	8/17
TK-SQ-151	NPH*	8/2 - 8/11	8/15	8/16	8/18	8/18	NO	NO*	10/11
TK-SQ-152	NPH*	8/2 - 8/11	8/16	8/17	8/18	8/18	NO	NO*	10/11
311-1	Methanol	8/14 - 8/23	8/25	8/25	8/30	8/30	NO	NO	9/1
311-2	Methanol	8/14 - 8/23	8/25	8/25	8/30	8/30	NO	NO	9/1
313	Methanol	8/14 - 8/23	8/28	8/29	8/30	8/30	NO	NO	9/5*
3000-8	Regular Gasoline*	8/25 - 9/4	9/6	9/7	10/10	10/10	NO	NO	10/10
3000-9	Regular Gasoline*	9/4 - 9/8	9/12	9/13	10/10	10/10	NO	NO	10/20
3000-10	Regular Gasoline*	9/8 - 9/14	9/18	9/19	10/5	10/5	NO	NO	10/10
3000-11	Diesel Fuel	9/14 - 9/20	9/22	9/22	10/12	10/12	NO	NO	10/31
3000-5	Diesel Fuel	9/20 - 9/27	9/29	9/29	9/15	9/15	YES*	YES	*
3000-6	Diesel Fuel	9/27 - 10/4	10/6	10/7	9/15	9/15	NO	YES	*
3000-7	Sodium Lignosulfonate	10/5 - 10/11	10/12	10/13	10/12	10/12	NO	NO	10/31
703-1	Used Solvent	10/5 - 10/10	10/12	10/13	9/9	9/9	YES	YES	9/9
3000-13	Diesel	10/13 - 10/18	10/20	10/22	10/12	10/12	NO	NO	10/20
2713W-25	Diesel	----	-----	-----	4/28	5/2	YES	YES	5/2

## \* SEE NOTES BELOW:

1. All regular gasoline tanks contained leaded fuel additives.
2. NPH - Normal Paraffin Hydrocarbon.
3. 622-R field leak detection was from a surface spill, all contaminated material was removed prior to backfill, not reported to WDOE.
4. One data point from the TK-SQ-151/152 excavation indicated extremely high Total Petroleum Hydrocarbon (>10,000ppm) while inspections of the site indicated "None Detectable" with a Organic Vapor Analyzer.
5. 3000-5 release is from a tank over-fill condition not from a tank leak.
6. 2713W-25 core boring to determine the plume size was performed 6/6 to 7/1/89.
7. The common 3000-5 and 3000-6 excavation will be backfilled when the current remediation effort is completed.

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ATTACHMENT 2  
HANFORD SITE UNDERGROUND STORAGE TANKS  
CATEGORIES A, B & C

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<u>Tank Identification Number</u>	<u>Alias</u>	<u>Location</u>	<u>Category</u>	<u>Landlord</u>
130-D-1		100 Area	A	Westinghouse Hanford Company (WHC) Defense Reactor Division (DRD)
130-K-1	1717K-LG	100 Area	A	WHC - DRD
130-K-2	1717K-DF	100 Area	A	WHC - DRD
311-1 Methanol	311-W	300 Area	A	WHC - DRD
311-3 Methanol	311-E	300 Area	A	WHC - DRD
313 Methanol Tank	313 Building	300 Area	A	WHC - DRD
703-1		700 Area	A	WHC-Information Resource Management (IRM)
3000-5	5-3000	3000 Area	A	Kaiser Engineering Hanford Company (KEH)
3000-6	6-3000	3000 Area	A	KEH
3000-8	8-3000	3000 Area	A	KEH
3000-9	9-3000	3000 Area	A	KEH
3000-10	10-3000	3000 Area	A	KEH
3000-11	11-3000	3000 Area	A	KEH
600-1	1-600	600 Area	A	WHC-Resource Allocation & Management (RAM)
600-2	2-600	600 Area	A	WHC - RAM
600-3	3-600	600 Area	A	WHC - RAM
622R	PNL	600 Area	B	Pacific Northwest Laboratories
TK-SQ-151	B Plant	200 East	B	WHC-Defense Waste Management (DWM)
TK-SQ-152	B Plant	200 East	B	WHC - DWM
3000-1	1-3000	3000 Area	C	KEH
3000-2	2-3000	3000 Area	C	KEH
3000-3	3-3000	3000 Area	C	KEH
3000-4	4-3000	3000 Area	C	KEH
1171-4	4-1171	1100 Area	C	WHC-Operations Support Services (OSS)
1171-5	5-1171	1100 Area	C	WHC - OSS
1171-6	6-1171	1100 Area	C	WHC - OSS
713W-21	21-2713W	200 West	C	WHC - OSS
82-1	382 Gas 1	300 Area	C	WHC - OSS
82-2	382 Gas 2	300 Area	C	WHC - OSS
82-3	382 Gas 3	300 Area	C	WHC - OSS

Category A - Permanently Closed  
Category B - Temporarily Closed  
Category C - Active Tanks Installed 1965 or Earlier

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LIST OF ABBREVIATIONS, ACRONYMS, AND INITIALISMS

API	American Petroleum Institute
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
DWR	Defense Waste Remediation
Ecology	Washington State Department of Ecology
ENV	Environmental Division
EPA	U.S. Environmental Protection Agency
ERD	Environmental Restoration Division
FDC	functional design criteria
FME	Fuels & Materials Examination Facility Plant
FTF	Fast Flux Test Facility
FY	fiscal year
HFD	Hanford Fire Department
HRO	Hanford Restoration Operations
IRM	Information Resource Management
KEH	Kaiser Engineers Hanford
NRP	N Reactor Plant
OP	Operation Programs
OPD	Operations Division
OPS	Facility Operations
OSS	Operations Support Services
PAL	Processing & Analytical Laboratories
PFP	Plutonium Finishing Plant
PMD	Project Management Division
PNL	Battelle Pacific Northwest Laboratory
PRX	Plutonium-Uranium Reduction Extraction Plant
RCRA	Resource Conservation and Recovery Act of 1976
RCW	Revised Code of Washington
RDD	Reactor Development Division
RL	U.S. Department of Energy, Richland Field Office
RR	Restoration and Remediation
SARA	Superfund Amendments and Reauthorization Act of 1986
SAS	Safeguards and Security
SER	Site Services
SID	Site Infrastructure Division
TFP	Tank Farm Projects
TSD	Technical Support Division
UST	underground storage tank
WAC	Washington Administrative Code
Westinghouse Hanford	Westinghouse Hanford Company
WMD	Waste Management Division
WT	Waste Tank Safety, Operations and Remediation
WTM	Waste Tank Management

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Revision 3

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**IMPLEMENTATION PLAN FOR WASHINGTON ADMINISTRATIVE CODE 173-360;  
UNDERGROUND STORAGE TANK REGULATIONS**

**1. INTRODUCTION AND TANK CATEGORY DEVELOPMENT**

**1.1. INTRODUCTION**

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The purpose of this implementation plan is fourfold: (1) It will describe the underground storage tanks (UST) at the Hanford Site currently regulated by the law; (2) it will define the programs currently planned and/or underway by the affected Hanford Site contractors to meet these regulations; (3) it will provide estimated costs of compliance with testing requirements for fiscal year (FY) 1992 and, in the out years, to FY 1995; and (4) it will, through dissemination of information, provide a common understanding of compliance issues by all landlords as well as provide the opportunity for landlord cooperation to achieve efficiency and minimize the costs of compliance.

Section 2.0 of this plan describes the responsibilities and efforts which are underway or planned to comply with the regulations on a sitewide basis.

Section 3.0 provides a general overview of the notification process.

Section 4.0 discusses estimated costs to be used as a basis for estimating out-year costs. Estimates for tank testing at the Hanford Site are presented to assist in planning adjustments necessary to accomplish work required by the regulations. The preparation of schedules is also discussed.

Section 5.0 discusses actions to be undertaken in the event an UST system release is discovered.

Section 6.0 contains the references.

Appendix A contains a summary of provisions of Washington Administrative Code (WAC) 173-360; *Underground Storage Tank Regulations* (Ecology 1990).

Appendix B contains a format for a 20-day and a 90-day report.

**1.2. TANK CATEGORY DEVELOPMENT**

The Hanford Site has over 320 storage tanks constructed wholly or partially underground and used for a variety of purposes. Two kinds of regulated USTs exist at the Hanford Site as defined by current regulations (see Appendix A). Petroleum USTs comprise the majority of active and out-of-service tanks, and most of the regulations are geared toward them. USTs containing hazardous substances are also present at the Hanford Site and special requirements for them are addressed. The USTs containing radiological material are not addressed in this plan.

Over 60 of the UST systems on the Hanford Site are currently affected to varying degrees by WAC 173-360 (Ecology 1990). All but two of the UST systems are operated by Westinghouse Hanford Company (Westinghouse Hanford), while Battelle Pacific Northwest Laboratory (PNL) and Kaiser Engineers Hanford (KEH) each operate an UST system. Table 1-1 lists the tank's identification number, contents, and installation date (if known); its closure and/or upgrade category; the operable unit it is located in; the responsible operating organization; and the responsible organization at the U.S. Department of Energy, Richland Field Office (RL). The categories (A through I) are based on age and service status of the UST systems and indicate when release detection or closure is required. Category X contains the deferred UST systems (see Appendix A, Section 3.2). Table 1-2 explains the closure requirements for Categories A and B and the upgrade requirements for Categories C through H. These requirements are applicable to all Hanford Site contractors. All regulated active tanks must be either closed or upgraded to new tank standards by 1998.

The regulations allow some latitude with regard to tank closures and upgrades. Table 1-2 summarizes these requirements for tanks which have been permanently or temporarily closed. Table 1-3 summarizes the upgrade requirements for active tanks in the three major areas covered by the regulations, which are leak detection, corrosion protection, and spill/overfill prevention. Tables 1-2 and 1-3 were modified from *Musts for USTs: A Summary of the New Regulations for Underground Storage Tank Systems* (EPA 1988b).

Table 1-1. Hanford Site Underground Storage Tanks Listed by Category. (Sheet 1 of 4)

TANK IDENTIFICATION NUMBER	CONTENTS	YEAR INSTALLED	CAT	OPERABLE UNIT	OPERATOR	RL OWNER
100-FS-32	OIL	1965	A	200-IU-2	OSS/HFD	TSD
130-B-1	DIESEL	UNKNOWN	A	100-BC-1	RR/ENV	ERD
130-K-3A	DIESEL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
130-K-3B	DIESEL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
130-KE-1A	DIESEL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
130-KE-1B	DIESEL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
130-KW-1A	DIESEL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
130-KW-1B	DIESEL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
165-KE-E	ETHYLENE GLYCOL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
165-KE-W	ETHYLENE GLYCOL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
165-KW-E	ETHYLENE GLYCOL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
165-KW-W	ETHYLENE GLYCOL	UNKNOWN	A	100-KR-2	RR/ENV	ERD
184-D0-DT	DIESEL	1962	A	100-NR-3	OPS/NRP	OPD
200-W-FS-36	OIL	1965	A	200-IU-5	OSS/HFD	TSD
325-1	DIESEL	1952	A	300-FF-3	RR/ENV	ERD
Nike 6652-P	DIESEL	UNKNOWN	A	N/A	RR/ENV	ERD
" " 6652-L-39	DIESEL	1962	A	N/A	RR/ENV	ERD
1171-6 <sup>b</sup>	WASTE OIL	1953	B	1100-EM-2	OSS/SER	SID
1171-4 <sup>b</sup>	WASTE OIL	1953	C	1100-EM-2	OSS/SER	SID
1171-5 <sup>b</sup>	WASTE OIL	1953	C	1100-EM-2	OSS/SER	SID
2713-W-21 <sup>b</sup>	WASTE OIL	1943	C	200-SS-2	OSS/SER	SID
382-1 <sup>b,c</sup>	GASOLINE	1943	C	300-FF-3	OSS/SER	SID

TANK IDENTIFICATION NUMBER	CONTENTS	YEAR INSTALLED	CAT	OPERABLE UNIT	OPERATOR	RL OWNER
382-2 <sup>b,c</sup>	GASOLINE	1943	C	300-FF-3	OSS/SER	SID
382-3 <sup>b,c</sup>	GASOLINE	1943	C	300-FF-3	OSS/SER	SID
2713W-23 <sup>b</sup>	GASOLINE	1976	D	200-SS-2	OSS/SER	SID
241-A-701 <sup>c</sup>	DIESEL	1964	E	200-PO-3	WT/TFP	WTM
2713E-20 <sup>b</sup>	DIESEL	1976	E	200-SS-1	OSS/SER	SID
6652-C <sup>c</sup>	GASOLINE	1952	E	1100-IU-1	PNL	RDD
100-B-1 <sup>b,c</sup>	DIESEL	1969	F	100-BC-1	OSS/SER	SID
1172-8 <sup>b</sup>	GASOLINE	1981	F	1100-EM-2	OSS/SER	SID
1172-9 <sup>b</sup>	GASOLINE	1981	F	1100-EM-2	OSS/SER	SID
1172-10 <sup>b</sup>	DIESEL	1981	F	1100-EM-2	OSS/SER	SID
1172-11 <sup>b</sup>	GASOLINE DIESEL	1981	F	1100-EM-2	OSS/SER	SID
222S-1 <sup>c</sup>	DIESEL	1977	F	200-RO-3	OPS/PAL	OPD
2713W-22 <sup>b</sup>	GASOLINE	1981	F	200-SS-2	OSS/SER	SID
2713W-24 <sup>b</sup>	DIESEL	1981	F	200-SS-2	OSS/SER	SID
200E-HSF-17 <sup>b</sup>	JET FUEL	1984	G	200-SS-1	OSS/SAS	OPD
2711E-26 <sup>b</sup>	WASTE OIL	1985	G	200-SS-1	OSS/SER	SID
2713E-19 <sup>b</sup>	GASOLINE	1981	G	200-SS-1	OSS/SER	SID
3000-12	WASTE OIL	1980	G	1100-EM-3	KEH	PMD
3621-D <sup>b,c</sup>	DIESEL	1971	G	300-FF-3	OSS/SER	SID
400-FS-40 <sup>b</sup>	GASOLINE	1986	G	300-FF-4	OSS/HFD	TSD
400-FS-41 <sup>b</sup>	DIESEL	1986	G	300-FF-4	OSS/HFD	TSD
400-FFTF-T-17 <sup>c</sup>	DIESEL	1974	G	300-FF-4	OPS/FTF	OPD
400-FFTF-T-18 <sup>c</sup>	DIESEL	1974	G	300-FF-4	OPS/FTF	OPD

Table 1-1. Hanford Site Underground Storage Tanks Listed  
by Category. (Sheet 2 of 4)

TANK IDENTIFICATION NUMBER	CONTENTS	YEAR INSTALLED	CAT	OPERABLE UNIT	OPERATOR	RL OWNER
400-FFTF-T-24 <sup>c</sup>	DIESEL	1974	G	300-FF-4	OPS/FTF	OPD
TK-101 <sup>c</sup>	DIESEL	1972	G	200-BP-6	RR/DWR	WMD
244-AR <sup>c</sup>	DIESEL	1973	H	200-PO-3	WT/TFP	WMD
204-AR <sup>c</sup>	DIESEL	1990	I	200-PO-3	WT/TFP	WMD
242-A-1 <sup>c</sup>	DIESEL	1990	I	200-PO-3	WT/TFP	WMD
251-W <sup>c</sup>	DIESEL	1980	I	200-NO-1	OSS/SER	SID
2721E-HP-18 <sup>b</sup>	DIESEL	1981	I	200-SS-1	OSS/SAS	OPD
2721Z-1 <sup>c</sup>	DIESEL	1983	I	200-ZP-1	OPS/PFP	OPD
2736ZA-1 <sup>c</sup>	DIESEL	1983	I	200-ZP-1	OPS/PFP	OPD
281-A-1 <sup>c</sup>	DIESEL	1982	I	200-PO-1	OPS/PRX	OPD
3621-C <sup>c</sup>	DIESEL	1991	I	300-FF-3	OSS/SER	SID
400-FFTF-T-303 <sup>c</sup>	DIESEL	1980	I	300-FF-4	OPS/FTF	OPD
400-FMEF-T-17 <sup>c</sup>	DIESEL	1983	I	300-FF-4	OPS/FME	OPD
284E-BP-1	SODIUM CHLORIDE BRINE	UNKNOWN	X	200-SS-1	OSS/SER	SID
284E-BP-2	SODIUM CHLORIDE BRINE	UNKNOWN	X	200-SS-1	OSS/SER	SID
284W-BP-1	SODIUM CHLORIDE BRINE	UNKNOWN	X	200-SS-1	OSS/SER	SID
284W-BP-2	SODIUM CHLORIDE BRINE	UNKNOWN	X	200-SS-1	OSS/SER	SID

Table 1-1. Hanford Site Underground Storage Tanks Listed  
by Category. (Sheet 3 of 4)

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<sup>a</sup> Key to Category

Category A	Permanently closed.
Category B	Temporarily closed--Activate and upgrade or remove within 12 months after closure.
Category C	Tightness test and leak detection.
Category D	Tightness test and leak detection.
Category E	Tightness test and leak detection.
Category F	Tightness test and leak detection by December 22, 1992.
Category G	Tightness test and leak detection by December 22, 1993.
Category H	Tightness test and leak detection by December 22, 1994.
Category I	Tightness test and leak detection by December 22, 1995.
Category X	Deferred UST Systems (Appendix A, Section 3.2)

<sup>b</sup> These tanks are identified under Project L044 (WHC 1989b).

<sup>c</sup> These tanks supply fuel to emergency generators).

Table 1-1. Hanford Site Underground Storage Tanks Listed  
by Category. (Sheet 4 of 4)

Table 1-2. Closure or Upgrade Schedules for Underground Storage Tanks.

### Schedule For Required Temporary/Permanent Closure

TYPE OF TANK & PIPING	REQUIRED ACTION	DEADLINE DATE
Category A - Permanently Closed	Empty and Clean Remove From Ground or Fill With Inert Solid Material Perform Site Assessment and Corrective Action as Necessary Provide Notification Prior and Following Action as Required	December 22, 1989 Or 12 Months After Temporary Closure or as Negotiated With the Department of Energy
Category B - Temporarily Closed	Operate and Maintain Corrosion Protection Operate and Maintain Release Detection if Not Empty	Immediately
	Cap and Secure All Lines, Pumps, Manway & Ancillary Equipment Leave Vent Lines Open & Functional	March 22, 1989 Or 3 Months After Temporary Closure
	Permanently Closed	December 22, 1989 Or 12 Months After Temporary Closure

### Schedule For Implementation of Required Upgrades

TYPE OF TANK & PIPING	LEAK DETECTION	CORROSION PROTECTION	SPILL/OVERFILL PREVENTION
New Tanks and Pippings*	At Installation	At Installation	At Installation
Existing Tanks** Installed Category C Tanks Category D Tanks Category E Tanks Category F Tanks Category G Tanks Category H Tanks Category I Tanks	By No Later Than: December 1989 December 1990 December 1991 December 1992 December 1993 December 1994 December 1995	December 1998	December 1998
Existing Piping** Pressurized Suction	December 1990 Same as Existing Tanks	December 1998 December 1998	Does Not Apply Does Not Apply

\* New tanks and piping are those installed after December 1988.

\*\* Existing tanks and piping are those installed before December 1988.

Tanks which cannot meet this schedule for upgrade must be closed permanently by the scheduled upgrade deadline date.

Table 1-3. Upgrade Requirements for Active Underground Storage Tanks.

RELEASE DETECTION	
NEW TANKS	Monthly Monitoring* Daily Inventory Control and Tank Tightness Every 5 Years For 10 Years After Installation Only
EXISTING TANKS	Monthly Monitoring* Daily Inventory Control and Annual Tank Tightness Testing Until December 1998 Only Daily Inventory Control and Tank Tightness Testing Every 5 years Until December 1998 or For 10 Years After Installation of Corrosion and Spill/Overflow Equipment Only
NEW & EXISTING PRESSURIZED PIPING	(One Method From Each Set) Automatic Flow Restrictor      Annual Line Testing Automatic Shutoff Device      Monthly Monitoring* Continuous Alarm System      Except Automatic Tank Gauging
NEW & EXISTING SUCTION PIPING	Monthly Monitoring* Line Testing Every 3 Years No Requirements For Systems Designed to Specific Criteria
CORROSION PROTECTION Implementation of One Method Required	
NEW TANKS	Coated and Cathodically Protected Steel Fiberglass Steel Tank Clad With Fiberglass
EXISTING TANKS	Same Options as For New Tanks Add Cathodic Protection System Interior Lining Interior Lining and Cathodic Protection
NEW PIPING	Coated and Cathodically Protected Steel Fiberglass
EXISTING PIPING	Same Options as For New Piping Cathodically Protected Steel
SPILL/OVERFILL PREVENTION Implementation of One Method Required	
ALL TANKS	Catchment Basins      -And-      Automatic Shutoff Devices -or- Overfill Alarms -or- Ball Float Valves
*Monthly Monitoring Includes:      Automatic Tank Gauging      Ground-Water Monitoring Vapor Monitoring      Other Approved Methods Interstitial Monitoring	



## 2. CONTRACTOR ROLES AND RESPONSIBILITIES

### 2.1. PROJECT MANAGEMENT

Westinghouse Hanford has been assigned Project Management responsibility at Hanford by RL for the implementation of WAC 173-360 (Ecology 1990). While RL is the owner of all tanks on the Hanford Site, it is the responsibility of each UST system operator to ensure that their tank(s) are in full compliance with all applicable UST regulations.

#### 2.1.1. Project Manager Responsibilities

The lead in Westinghouse Hanford for the compliance effort is the Environmental Division (Decommissioning & RCRA Closure Program [Program Office]). They are responsible to:

- Be cognizant of all activities involving USTs to assure compliance with the regulations.
- Request funding to perform tasks associated with compliance (either from the owner and operator or from RL as discussed in Section 4.2).
- Direct/coordinate the preparation of offsite bids to perform work.
- Coordinate with other contractors in compliance efforts, and provide interface with RL.
- Request, as necessary, RL to notify the Washington State Department of Ecology (Ecology) of changes in tank status.
- Review new regulations (local, state, and federal) that may impact this plan and provide updates as necessary.<sup>1</sup>
- Provide immediate and subsequent notifications and reports to RL for submission to Ecology and/or assure it is done in the event that a UST is found to have leaked or been overfilled.
- Provide all checklists and notification forms to RL for submission to Ecology for all regulated tanks activities performed on the Hanford Site.
- Assure that performance upgrades (e.g., release detection, corrosion protection) or closure requirements are implemented by the respective December 22 deadline for each UST category.
- Provide guidance to UST system operators and RL regarding cleanup of contaminated UST sites and negotiate with Ecology regarding cleanup levels and options.

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<sup>1</sup>Performed by both Decommissioning & RCRA Closure Program Office and Hanford Restoration Operations.

The Program Office will only take full responsibility for the unclaimed orphan UST systems no longer in service. Final decisions regarding compliance issues on all other tanks rest with the facility operator. The Program Office will provide guidance and assistance to the UST system operators to ensure that the regulations are complied with. To accomplish this, it is imperative that UST system operators fully cooperate with the Program Office and provide all relevant UST system information in a timely manner.

Hanford Restoration Operations (HRO) shall:

- Provide qualified, licensed personnel to direct and verify compliance with UST tightness testing and removal.
- Develop procedures and direct the field operations for tank removal, final cleaning, and disposal of tanks.
- Develop and manage the Release Detection Program for Category C through I Tanks (this effort will increase annually as subsequent categories come under regulations each year).
- Coordinate site assessments and ensure that they are implemented in accordance with available guidance set forth by Ecology.<sup>2</sup>
- Develop and implement site remediation of UST sites as necessary.
- Maintain the official records of the UST program.
- Update the UST database periodically by providing detailed questionnaires to facility managers for verifying UST system status and operating conditions by system walkdowns, etc.

Environmental Engineering shall:

- Provide labor and equipment to collect liquid and soil samples for waste designation and site assessment.
- Perform site assessments using personnel registered with Ecology.
- Provide HRO (Decommissioning Engineering) with recommendations on site closure and remediation efforts as required.
- Provide input to preparing the required notifications and reports to RL/Ecology.
- Recommend level of and obtain necessary National Environmental Policy Act of 1989 (NEPA) documentation.

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<sup>2</sup>Performed by Environmental Engineering.

### 2.1.2. Westinghouse Hanford Company Divisional Responsibilities

Other Westinghouse Hanford Divisions shall support these compliance efforts as follows:

- Solid Waste Engineering - responsible for the designation of each tank's contents as to waste classification, manage the contract to empty and rinse each tank prior to removal (including waste disposal), manage the contract to clean and certify tanks after removal for offsite disposal.
- Remediation Maintenance - provide labor, equipment, and a licensed site supervisor to physically excavate, remove, and transport USTs.
- Landlord Programs Management/Projects Division - prepare an Engineering Study, Functional Design Criteria, and Conceptual Design Report to match anticipated needs of UST system operators (WHC 1989b).
- All UST operators - provide information and routine data collection to the HRO (Decommissioning Engineering) for the Release Detection Program and provide updated UST system information as requested or whenever there is a change in the UST system.

### 2.2. OTHER HANFORD CONTRACTORS RESPONSIBILITIES/INTERFACES

Interfaces and shared liabilities are numerous in the UST closure and testing areas. Kaiser Engineers Hanford and PNL have contractual responsibilities to RL and as well as liabilities as operators of UST systems under WAC 173-360 (Ecology 1990). In order to assure that these responsibilities are met and liabilities minimized, it is imperative that a close, well understood interface exist between Westinghouse Hanford, as Project Manager, and both KEH and PNL as operators.

Each contractor shall be responsible to notify Westinghouse Hanford Environmental Division (Program Office) of its designated representative for all UST related matters. This designated representative shall then be responsible for proper dissemination of information (as described above under UST Operator responsibilities) within the contractor organization.

### 2.3. COMPLIANCE ACTIONS

As required by the new state UST regulations, Westinghouse Hanford has obtained an Underground Storage Tank Service Provider License from Ecology. Those employees performing regulated tank activities have obtained the necessary Supervisor licenses from the state as well as being registered as site assessors.

Actions and due dates, itemized below, shall be performed for each UST as listed on Table 1-1.

### 2.3.1. Category A--Permanently Closed

The UST systems that contain petroleum or other regulated substances which are to be permanently closed may be either filled with inert solid material or removed from the ground. Associated piping shall be removed or drained, capped, and abandoned in place. Once the system is removed, a site assessment must be performed by a person registered with Ecology. If a system release is discovered through the sampling efforts, then corrective action as described in Section 2.6.3 is required. These actions must be completed within 12 months of temporary closure or as otherwise arranged with Ecology. Because of the difficulty of sampling beneath an in-place UST system and to preclude any future liability, removal of all permanently closed tanks and piping is the selected option, unless cost or safety issues significantly impact this decision. For UST systems closed by HRO, a written removal procedure is in place (DWP-G-020-00001, "Underground Storage Tank Removal" [WHC 1992]) which is based on API Recommended Practice 1604, *Removal and Disposal of Used Underground Petroleum Storage Tanks* (API 1987), and current guidance documents from Ecology regarding site assessments and remedial activities. It includes a pre-job site inspection, a complete description of the removal process and site assessment, as well as provisions for minor site cleanup (less than 100 yd<sup>3</sup>). The analytical results from sampling shall be appended to the UST removal procedure work package when they become available, and the work package shall be considered a permanent record to be maintained for at least five years. This package shall be made available for inspection to ensure compliance with all applicable regulations. See Section 2.7 for previously abandoned tank systems.

### 2.3.2. Category B--Temporarily Closed

Should an UST system fall into this category, it must be permanently closed, similar to the steps outlined in Section 2.3.1, or reactivated within 12 months of temporary closure. If reactivated, after 3 months of temporary closure, the UST shall be tightness tested and put into compliance with applicable release detection requirements. After 12 months of temporary closure, the tank will be upgraded to new tank standards if not removed from the ground. The main reason for placing a tank in temporary closure is to allow time for planning and funding the removal. This allows the UST system to be taken out of service, usually to meet a regulatory deadline, without undergoing immediate removal. See Section 10.1 of Appendix A for additional requirements.

### 2.3.3. Category C--Active Tanks Installed 1965 or Earlier

Monthly inventory control and annual tank tightness testing (see Appendix A, Section 8.0) has been implemented for these tanks. The first tightness test and the development of the monthly monitoring plan occurred before December 22, 1989.

**2.3.4. Category D--Active Tanks Installed 1965-1969**

Monthly inventory control and annual testing (see Appendix A, Section 8.0) was instituted prior to December 22, 1990.

**2.3.5. Category E--Active Tanks Installed 1970-1974 and Emergency Generator Tanks Installed 1965 or Earlier**

Monthly inventory control and annual testing (see Appendix A, Section 8.0) was instituted prior to December 22, 1991.

**2.3.6. Category F--Active Tanks Installed 1975-1979 and Emergency Generator Tanks Installed 1965-1969**

Monthly inventory control and annual testing (see Appendix A, Section 8.0) shall be instituted prior to December 22, 1992.

**2.3.7. Category G--Active Tanks Installed 1980-1988 and Emergency Generator Tanks Installed 1970-1975**

Monthly inventory control and annual testing (see Appendix A, Section 8.0) shall be instituted prior to December 22, 1993.

**2.3.8. Category H--Emergency Generator Tanks Installed 1975-1979**

Monthly inventory control and annual testing (see Appendix A, Section 8.0) shall be instituted prior to December 22, 1994.

**2.3.9. Category I--Emergency Generator Tanks Installed 1980 and All Regulated UST Systems Installed After 1988**

Monthly inventory control and annual testing (see Appendix A, Section 8.0) shall be instituted prior to December 22, 1995, or installed according to new tank standards.

**2.4. TANK AND PIPING STANDARDS**

**2.4.1. New Tank Standards**

All organizations must establish plans by which their tanks must be either upgraded or replaced to meet new tank standards. These standards are summarized in Sections 5.0, 6.0, 7.0, and 8.0 of Appendix A and become mandatory for all UST systems on December 22, 1998.

Most requirements in WAC 173-360 apply specifically to petroleum USTs. For UST systems containing other regulated substances, special upgrade requirements also apply. By December 1998, all UST systems containing other regulated substances will require secondary containment and interstitial monitoring as their primary method of leak detection and meet standards in the areas of corrosion protection (including piping) and spill/overflow.

prevention. The USTs containing radioactive materials that may also be affected by these regulations are not addressed in this implementation plan.

#### 2.4.2. Underground Storage Tank Piping Requirements

All active USTs which utilize pressurized piping have met the leak detection requirements as outlined in Appendix A, Section 8.5, which was required by December 22, 1990. This includes automatic shutoff, automatic flow restrictions, or continuous alarm in the event of a leak. Annual tightness testing or monthly monitoring is required.

Active tanks, with suction piping which leaves the line full, will meet the release detection requirements for new suction piping; however, this will be accomplished according to the same schedule as the leak-detection upgrades on the tanks themselves (Sections 2.3.3 through 2.3.9). The release detection for suction piping consists of tightness testing every three (3) years or monthly monitoring. The initial tightness test will be performed at the same time the tank meets the leak detection schedule (Sections 2.3.3 through 2.3.9). Suction piping designed to leave the line empty in the absence of demand is exempt from this requirement.

### 2.5. RELEASE DETECTION PROGRAM REQUIREMENTS

#### 2.5.1. Tightness Testing

Tank tightness testing shall be performed by a Westinghouse Hanford subcontractor and be available to Westinghouse Hanford Operating Divisions, KEH, and PNL as a service provider by HRO, or by separate certified testing subcontract administered by each tank operator. Necessary tank preparations shall be specified by the subcontractor and be prepared for testing by the operating unit. Schedules for HRO administered tank testing will be developed with normally two week notification prior to testing. This lead time is necessary due to the anticipated tank conditions for the tests, i.e., completely filled and out of service for 12 to 24 hours prior to test and out of service until after the test completion.

Each UST operator and HRO shall be informed in writing of the test results as soon as available. In the event that a tank fails to meet tightness requirements as discussed in Section 8.0 of Appendix A, the Program Office shall be notified and will start the notification process in accordance with Section 3.0.

#### 2.5.2. Monitoring Program

The monitoring program shall provide for routine data collection and monthly evaluations to ensure that leaks that may develop between annual tightness testing are identified and stopped as early as possible. Westinghouse Hanford HRO shall provide an administrative control procedure to specify data requirements for each participating UST operator. Although each UST operator may opt to use individually developed procedures and methods, all

Hanford Site UST Release Detection data shall meet the requirements of WAC 173-360 (Ecology 1990) as outlined in Appendix A.

All data, regardless of operator or method of monitoring, shall be submitted to Westinghouse Hanford HRO for monthly evaluation, trend analysis, and release reporting as outlined in Section 8.0 of Appendix A.

## 2.6. TANK CLOSURE

### 2.6.1. Notifications and Tank Preparations

The initial steps for permanent tank closure shall proceed as follows once the decision has been made to permanently close a particular UST.

- Westinghouse Hanford Company Program Office will notify Ecology through RL concerning the change in tank status at least 30 days prior to the change in status.
- Liquid samples from the tanks will be obtained for analysis and waste designation in accordance with approved procedures when the history of the system is unknown.
- Tank contents will be removed and disposed of in accordance with state and federal regulations.
- Tanks will be rinsed and flushed, the rinsate removed and disposed of as waste in accordance with state and federal regulations.
- Necessary site background data will be obtained for reporting requirements and work planning.

### 2.6.2. Actual Tank Removal

The UST system closures performed by HRO shall follow an approved procedure (WHC 1992) under the direction of a site supervisor registered with Ecology to ensure a safe and technically correct approach. Although the procedure may be modified by the site supervisor and/or cognizant engineer as the project progresses, to include refinements, the basic process is as follows:

- Absorbent will be added to eliminate minor liquid that may remain in the tank.
- Dry ice or carbon dioxide will be added to inert potentially explosive atmospheres in the UST prior to excavation. Excavation will not proceed until UST oxygen level is below 6 percent.
- The UST piping will be excavated and removed. Normally, the piping will be cut up and placed in the UST or disposed of onsite.

- The UST will be excavated and removed, labeled, and transported to a central location for storage. Tank will be cleaned and disposed of offsite.
- A site assessment will be performed by a person registered with Ecology. This includes obtaining soil samples (free product, if present) in the tank impression per an approved sample plan developed by Environmental Engineering complying with Ecology's latest guidance document(s).
- Westinghouse Hanford Program Office shall submit the appropriate checklist to the RL/Ecology and will assure immediate (24 hour) notification as discussed in Section 3.0 for any tank suspected to have leaked.

Permanent closure must be completed within sixty (60) days after expiration of the thirty (30) day notification unless a written request for an extension is approved by the Ecology.

#### 2.6.3. Follow-up Actions

If sample results are below the action levels shown in Table A-1 of Appendix A, the excavation shall normally be backfilled, compacted to approximate pre-excavation density, and sloped to match the pre-excavation site appearance. The backfilling may only take place after the site has been assessed by a qualified individual (i.e., registered with the Ecology) and determined to be clean. If a leak or spill/overflow was determined to have occurred, the site will be cleaned to an acceptable level (with concurrence from Ecology) prior to backfilling. Normally at this point, the excavation limits of the backhoe will dictate the maximum extent of site cleanup. Special exceptions may be granted allowing the site to be marked and backfilled to be remediated at a future time or as part of an operable unit or to facilitate well drilling for groundwater sampling.

Site remediation/cleanup, necessary due to UST leakage, shall be planned, scheduled, and performed in accordance with WAC 173-340, *The Model Toxics Control Act Cleanup Regulation* (Ecology 1991), requirements on an individual case basis. If the contamination extends beyond the maximum sampling depth, the regulations require installation of groundwater sampling well(s). However, due to the extraordinary circumstances associated with many UST system locations at the Hanford Site, alternative actions may be negotiated with Ecology. Remediation plans shall be reviewed by and coordinated with Environmental Engineering prior to submission to Ecology for concurrence. It should be noted that the closure date stated in the 30-day advance notification to Ecology does not include actual site remediation/cleanup.

Underground storage tanks removed and stored at the central location as part of this project shall be transported offsite to be cleaned and disposed of. Westinghouse Hanford shall be supplied with certification from the subcontractor stating that the tanks and remaining contents have been properly disposed of. This work will be performed by experienced personnel working to industry standards.



## 2.7. ORPHAN TANKS

At this time, it is possible that additional undiscovered USTs may exist at the Hanford Site. These are most likely in areas of old town sites, 1940 central construction areas, or abandoned farmsteads. Such UST systems are located by performing facility walkdowns, inspecting site drawings, and through contact with individuals familiar with their respective facilities. If enough evidence points to the existence of a UST system, but no above ground equipment is present, a ground penetrating radar (GPR) may be performed at the site to establish the existence of a suspect UST system. As the status of USTs changes, all newly discovered regulated tanks will be reported to Ecology as required by regulations. If directed by Ecology, a site assessment will be performed on abandoned tank sites that may pose a threat to human health or the environment.

## 2.8. UST SYSTEMS IN OPERABLE UNITS

The Hanford Site has been divided into groups, known as operable units, based on similar characteristics, i.e., radioactive contamination, hazardous chemical contamination, etc. Currently 78 operable units have been designated on the Hanford Site. For additional information regarding the operable units on the Hanford Site, see WHC-EP-0216, *Preliminary Operable Units Designation Project*.

Any UST system (regulated or orphan) that is scheduled to be removed and is located in an active operable unit shall have its removal plan and schedule coordinated with the applicable Westinghouse Hanford Operable Unit Manager prior to its removal. If the site is discovered to be contaminated after tank removal (from the UST release), the cognizant parties shall determine if the remediation of the UST site can be completed as part of the respective operable unit cleanup or if the release causes more imminent danger and will require an immediate response action.

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### 3. NOTIFICATIONS

Ecology requires certain notifications be made throughout the service life of each UST. These notifications range from pre-installation notification and checklist to the final cleanup report following decommissioning of the UST. The regulations require that specific information be included with each notification, whether on a form (checklist) provided by Ecology or a written report generated by the owner, and that such notifications are made within the required time frames. Subsection 4.4 of Appendix A describes the installation notification requirements. Section 9 and Subsection 12.2 cover release reporting and the checklist requirements respectively. All notifications are submitted to Ecology via RL through the Program Office.

#### 3.1. REGISTRATION

All regulated UST systems on the Hanford Site are reported to Ecology using the state UST notification forms. These forms (supplied by Ecology) are updated by the Program Office on an approximate yearly basis to reflect changes caused by tank closure, new installation, or discovery of additional regulated systems. The information used to complete these forms is taken from the UST files maintained by Decommissioning Engineering which have been generated and updated through questionnaires sent out to UST operators. Ecology then reviews the notification forms and supplies permit applications for all UST systems that require a permit (see Section 4.1, Appendix A).

#### 3.2. RELEASE REPORTING

Following the discovery of a UST system release, several reports must be generated as described in Section 9 of Appendix A. Initially, the Program Office is notified of the release, and then either the tank owner, or the Program Office notifies the Occurrence Notification Center. The UST system landlord (Program Office for orphan tanks) is then responsible to make the required follow-up occurrence reports. Since the Occurrence Notification Center makes the 24-hour notification to Ecology, it is important that the Program Office is notified as soon as possible after the confirmation of a release.

For sites that are controlled by the Program Office (through HRO), the reports are generated within the Environmental Division as a joint effort between Decommissioning Engineering and Environmental Engineering, and finalized by the Program Office. For sites undergoing closure under the direction of the landlord, it is the responsibility of the landlord to supply draft reports to the Program Office for finalization and submittal to Ecology. All reports are reviewed and submitted by the Program Office to ensure completeness and consistency in reporting to Ecology.

It is important to note that although the regulations require that a 24-hour, 20-day, 90-day, and final report be generated for release sites, it is possible to eliminate up to all three of the last reports. That is, if

cleanup is completed in 24 hours, the 24-hour report is the final report and no further reporting is required. That holds true for both the 20-day and 90-day reports as well.

### 3.3. REGULATED UST ACTIVITIES

As mentioned throughout the body of this text, checklists are required following any regulated activity performed on a UST system. These checklists are covered in Subsection 12.2 of Appendix A and include: UST System Installation, Permanent Closure/Change-in-Service, Temporary Closure, Tightness Testing, Retrofitting/Repair, Cathodic Protection, and Site Check/Site Assessment.

In order to be able to perform any of the above mentioned regulated activities, a firm must be licensed with Ecology as an Underground Storage Tank Service Provider (WHC is licensed). In addition, the regulations require that certain individuals obtain supervising licenses from the state or become registered site assessors (see Subsection 12.1, Appendix A). Prior to submitting the checklists to Ecology, they must be signed by the service providing firm owner (Westinghouse Hanford), the tank owner (RL) as well as by the licensed supervisor who witnessed the activity. In order to expedite the signature process, the manager of the Westinghouse Hanford Environmental Division has been given authorization to sign for the Tank Service Provider and the RL line manager responsible for each UST is authorized to sign as tank owner.

As with all UST correspondence, the checklists are required to be reviewed by and submitted by the Program Office to ensure accuracy and timely submittal.

#### 4. COST ESTIMATES, FUNDING, AND SCHEDULING

##### 4.1. COST ESTIMATES

The cost estimates for UST removals are based on recent historical data available from previously removed tanks. This amount will vary depending if a release or overfill/spill had occurred or if the site is determined to be clean following the site assessment. However for budget purposes, a nominal cost of \$50,000 per tank should be used. This figure includes the tasks listed in Table 4-1 and is based on minor tank waste removal costs and no site remediation. The \$50,000 cost for removal can be summarized as follows:

- \$10,000 for prep work including GPR, flushing, liquid disposal, and procedure and work package preparations.
- \$20,000 for removal activities including utility isolation, inerting tank, site excavation, rigging, and removal.
- \$5,000 for site assessment and sample analysis.
- \$5,000 for tank disposal and administrative overhead (generating reports for Ecology).
- \$10,000 contingency (equipment, shoring and/or hand excavating, minor remediation, etc.).

Cost estimates for tightness testing and release detection implementation for category C through I tanks are approximately \$2,500 to \$3,500 annually per tank. Whether Westinghouse Hanford HRO or the operating organization performs the testing and manages the program, similar costs should be expected.

##### 4.2. FUNDING

Current funding and funding expectations are as follows:

- Funding for the permanent closures of regulated USTs, including tank disposal, shall be the responsibility of the owner and operator. Funding for orphan tanks is provided by Westinghouse Hanford Program Office as the need arises.
- Funding for tightness testing and data collection for the Release Detection Program (Categories C through I) shall be the owner and operator's responsibility.
- The owner and operator shall also be responsible for funding tank removal and site assessment of Category C through I tanks that leak or that are otherwise removed from service.

Table 4-1. Task Listing for Underground Storage Tank Decommissioning.

- 9 3 1 2 9 3 5 0 3 2 6
- \* 1. Engineering support for procedure and documentation preparation.
  - 2. Ground penetrating radar studies to determine actual tank and piping locations.
  - 3. Obtain samples of contents of each tank.
  - 4. Analyze samples from each tank to confirm contents and designate waste classification.
  - 5. Removal of tank contents by offsite vendor, included is certification of tank contents disposal from vendors.
  - 6. Each tank will be pumped and rinsed prior to excavation (excluding dry tanks).
  - \* 7. Tank tightness determination.
  - 8. Introduce dry ice or CO<sub>2</sub> into each tank to inert a combustible/explosive atmosphere.
  - 9. Introduce absorbent into each tank.
  - 10. Remove concrete or asphalt prior to excavation where concrete or asphalt exists.
  - 11. Excavate for tank removal and segregate any contaminated soils.
  - 12. Install shoring if necessary.
  - 13. Piping will be placed in the tank or disposed of onsite.
  - 14. Obtain a radiological release for the tank and piping.
  - 15. Obtain soil samples from the bottom of each tank excavation. Package and ship samples to lab to be analyzed.
  - 16. Complete site assessment.
  - 17. Transport tanks to central storage location.
  - 18. Subcontractor will remove, clean, dispose of as scrap, and provide certification for each tank and associated piping.
  - 19. Review analytical data for site characterization.
  - 20. Backfill clean tank site or perform required remediation activities.
  - 21. Replace concrete/asphalt slabs in designated areas where concrete slabs existed.
  - 22. Dispose of any contaminated soil removed during tank excavation.
  - 23. Complete all checklists and reports as required.

NOTE: All items pertain to UST removal (except item #7).

Only items marked (\*) pertain to UST tightness testing.

- Remedial actions necessary, due to UST leakage, are partially funded by the Program Office on a yearly basis for orphan tanks only. The tank owner and operator are responsible for any remediation required for nonorphan UST systems.
- A proposed line item in FY 1994 will include funds for the upgrade or replacement of the majority of the regulated Westinghouse Hanford UST systems to meet the 1998 deadline for active tanks to be closed or meet new tank standards (Project L0-44).
- Funding for tank upgrade, removal, replacement, or certification to meet new UST system standards by December 1998 shall be the responsibility of the owner and operator.

#### 4.3. SCHEDULES

The yearly schedule for implementing tightness testing and release detection is dictated by the individual tank categories as described in Section 2.3. Routine tightness testing is a relatively short duration operation that will normally be performed in the first quarter of each fiscal year. Those organizations using the Westinghouse Hanford HRO service for tightness testing will be notified a minimum of two weeks prior to the test date for tank preparation.

Regulated UST systems are scheduled for removal as required to meet compliance dates. Previously abandoned or orphaned UST systems will be scheduled for removal as funding is provided.

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## 5. LEAKS AND SPILLS

The EPA estimates that nationwide as many as 25 percent of the five million USTs currently operating in the country are leaking. Even if a much lower failure rate at the Hanford Site is assumed because of low soil moisture and corrosivity, removal, testing, and upgrade of USTs may reveal a significant leakage problem at several tank sites. In fact, most releases found to date have not been from corrosion problems, but from leaking pipe connections and/or tank spills and overfills.

When removing tanks, a certain amount of contaminated soil is almost always encountered. This could amount to less than a cubic foot due to a slight overfill, to several hundred yards from a leaking system. For the small amounts of contaminated soil, prompt cleanup is assumed. Larger contaminated areas may require additional plans and evaluations. There are several actions which must be taken to comply with the law following an UST release, regardless of the extent of the environmental damage or the pace of the cleanup. These actions include the following:

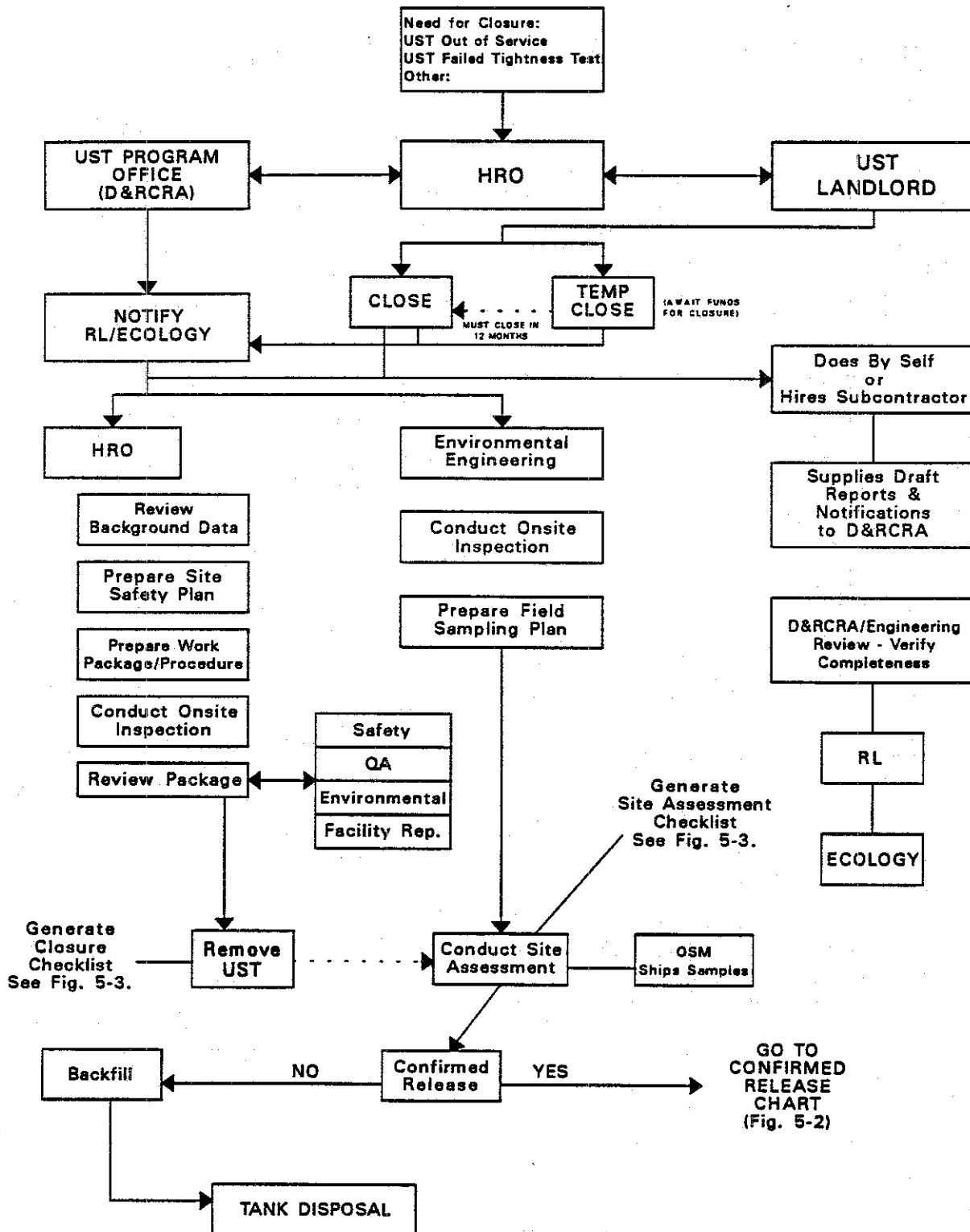
- For active tanks, the owner shall take immediate actions to stop and contain the leak or spill; such as emptying the tank as soon as possible.
- Ecology and the owner and operator will be notified within 24 hours of a suspected release. Within seven days, confirm the release and make 24-hour confirmation notice. Operational Westinghouse Hanford organizations will be required to prepare an Occurrence Report as well. The initial Occurrence Report and all required follow-up reports shall be done in accordance with WHC-CM-1-3, *Management Requirements and Procedures*, MRP 5.14, "Occurrence Reporting and Processing of Operations Information" (WHC 1988).
- The status of the cleanup/assessment following a confirmed release will be reported to Ecology within 20 days after confirmation of the release. See Appendix B for report format.
- Within 30 days after performing the site assessment, the Program Office will ensure that the Site Assessment Checklist has been completed and forwarded to RL for submittal to Ecology.
- Within 90 days after confirmation of the release, the owner shall submit a site characterization report to Ecology. This report shall include a site conditions map, any available results from soil sampling, and the remaining cleanup actions. See Appendix B for report format.
- Long-term actions will involve compliance with requirements established for the site by Ecology. Corrective action plans developed for the cleanup will be coordinated with the Operable Unit manager (if applicable) and submitted to Ecology for concurrence.

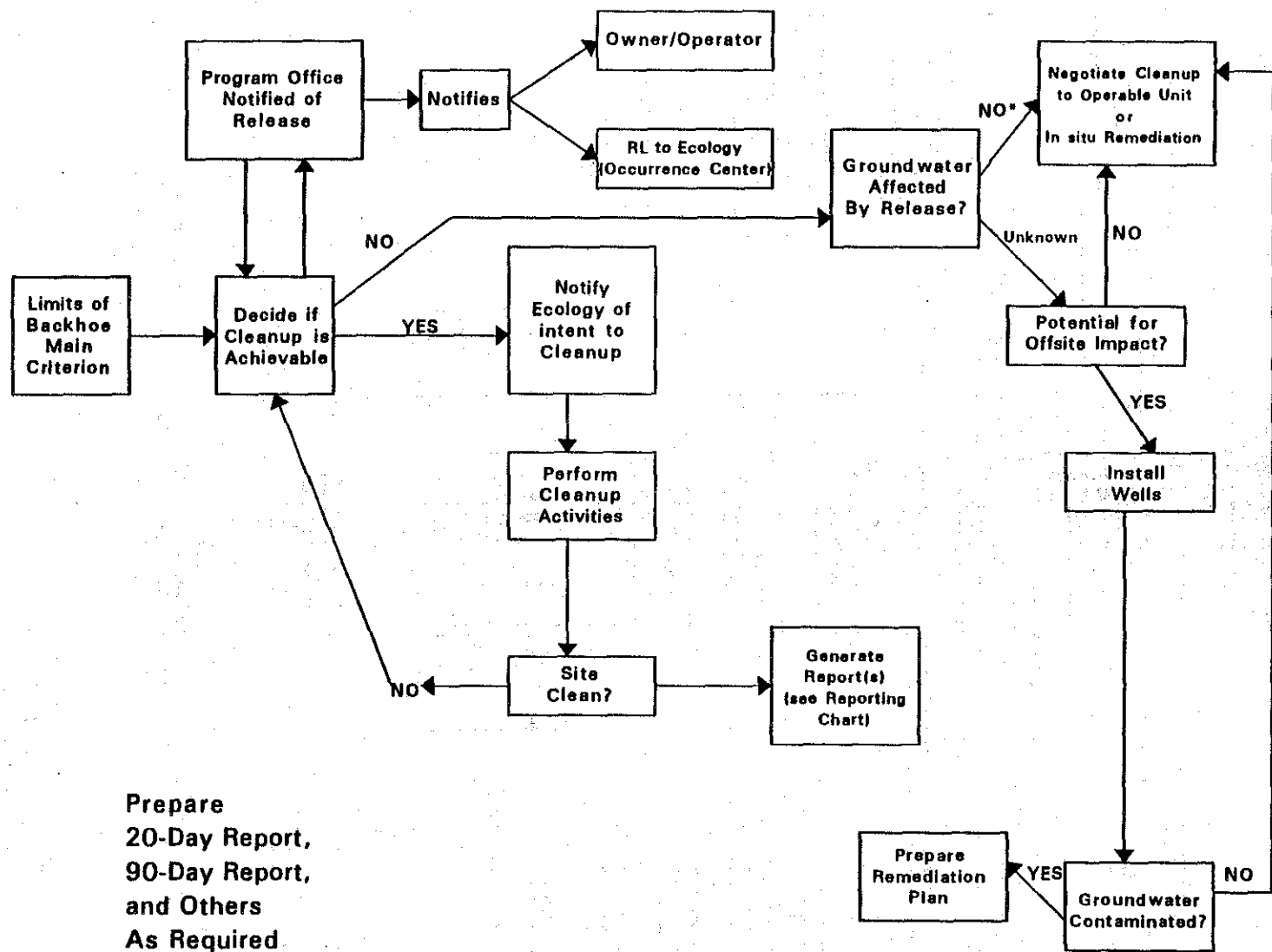
- Ecology may request additional information and/or testing should they decide it is necessary to characterize the site.

The Program Office will ensure that all reports are delivered to RL in time for review and submittal to Ecology to meet the regulatory deadlines. Both Decommissioning Engineering and Environmental Engineering will provide assistance to the Program Office in complying these reports. While the UST system operator may elect to complete their own reports, it is preferred to have them prepared by the Program Office to ensure completeness and consistency in reporting. Record copies of the reports and relevant supporting data relating to USTs on the Hanford Site will be maintained in the Decommissioning Engineering Record Files.

The following flowcharts illustrate the general decision making process and parties involved for handling closure of UST systems, the discovery of a UST system release, and reporting requirements (Figures 5-1, 5-2, and 5-3).

Figure 5-1. Flowchart for Closure of Underground Storage Tank Systems.

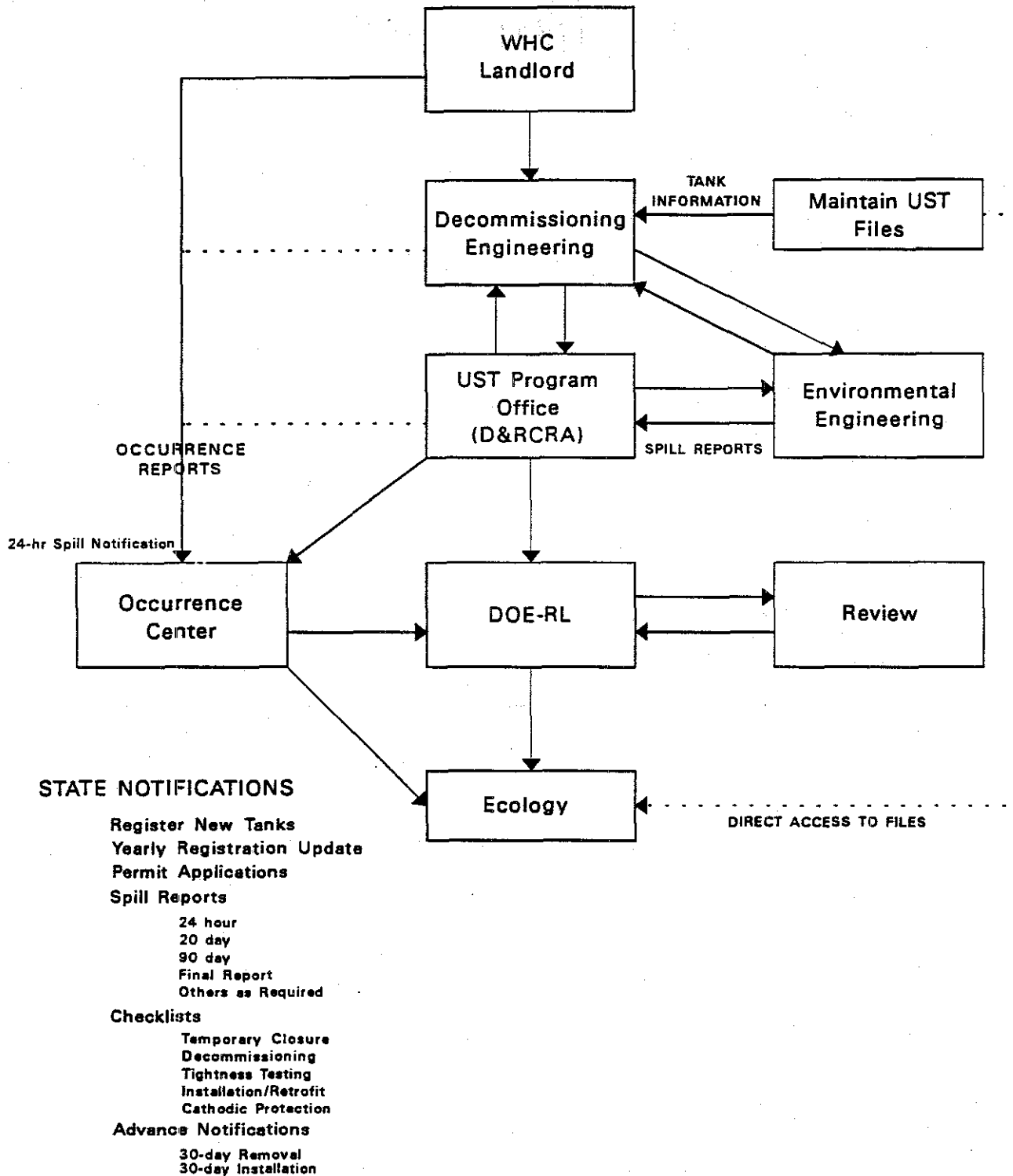




\*Confirmed by onsite sampling--limits of contamination reached.

Figure 5-2. Flowchart for Discovery of Underground Storage Tank System Release.

Figure 5-3. Flowchart for Reporting Requirements.



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**APPENDIX A**

**SUMMARY OF PROVISIONS WAC 173-360  
UNDERGROUND STORAGE TANK REGULATIONS**

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## APPENDIX A

### SUMMARY OF PROVISIONS WAC 173-360 UNDERGROUND STORAGE TANK REGULATIONS

#### 1. INTRODUCTION

The Hazardous and Solid Waste Amendments of 1984 extend and strengthen the provisions of the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (RCRA). Subtitle I of RCRA, as amended, provides for the development and implementation of a comprehensive regulatory program for underground storage tank (UST) systems containing regulated substances and unplanned releases of these substances to the environment. The Washington State Department of Ecology (Ecology) is directed by Chapter 90.76 Revised Code of Washington (RCW) to establish an UST program that, at a minimum, meets the requirements for delegation of the Federal Underground Storage Tank Program of RCRA. This appendix describes the provision of this regulation.

#### 2. OVERVIEW

The UST regulations final ruling, effective December 29, 1990, outlines the technical and operating standards for UST systems containing regulated substances, including product materials defined as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and petroleum products.

Prior to the state UST rules becoming effective, UST systems were regulated under 40 Code of Federal Regulations (CFR) 280 and 281. The legislative intent of the state UST rules is that they are consistent with and no less stringent than the objectives outlined in the federal regulations.

The UST regulations are organized into six major sections. The first section outlines the administration requirements for UST systems, including permitting, enforcement, and penalties.

The second section addresses the reporting and recordkeeping requirements, including the notifications required prior to installing, closing, or completing a change-in-service on regulated UST systems.

The third major section describes performance standards, operating, and closure requirements. This includes the requirements for corrosion protection, upgrading existing UST systems, and release detection.

The fourth section pertains to financial responsibilities and is not addressed in this outline because it does not apply to Federal government entities.

The fifth section addresses the delegation of certain UST programs to local authorities as well as developing more stringent requirements in environmentally sensitive areas.

The final major section deals with the registration and licensing requirements for UST service providers and service supervisors. Those who supervise UST activities shall now be registered with and licensed by the state.

### 3. PROGRAM SCOPE

#### 3.1. EXEMPT UST SYSTEMS

The term "underground storage tank" or UST is defined to include any one or combination of tanks (including underground pipes connected thereto) that is used to contain an accumulation of regulated substances and the volume of which (including the volume of underground pipes connected thereto) is 10 percent or more beneath the surface of the ground. The following systems, including any piping connected thereto, are exempt from the requirements of this appendix:

1. The UST system holding hazardous wastes subject to Subtitle C of the Federal Solid Waste Disposal Act or a mixture of such hazardous waste and other regulated substances.
2. Wastewater treatment tank system that is part of a wastewater treatment facility regulated under Section 402 or 307(b) of the Clean Water Act.
3. Equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks and electrical equipment tanks.
4. The UST system whose capacity is 110 gallons or less.
5. The UST system that contains a de minimis concentration of regulated substances.
6. Emergency spill or overflow containment UST system that is expeditiously emptied after use.
7. Farm or residential UST system of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes (i.e., not for resale).
8. The UST system of 1,100 gallons or less capacity used for storing heating oil for consumptive use on the premises where stored.

9. Septic tanks.
10. Any pipeline facility (including gathering lines) regulated under:
  - a. The Natural Gas Pipeline Safety Act of 1968,
  - b. The Hazardous Liquid Pipeline Safety Act of 1979, or
  - c. Which is an intrastate pipeline facility regulated under state laws comparable to the provisions of the law referred to in (10) (a) or (10) (b) of this subsection.
11. Surface impoundments, pits, ponds, or lagoons.
12. Storm water or wastewater collection systems.
13. Flow-through process tanks.
14. Liquid traps or associated gathering lines directly related to oil or gas production and gathering operations.
15. Storage tanks situated in an underground area (such as a basement, cellar, vault, mine-working drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

### 3.2. DEFERRED UST SYSTEMS

The following UST systems are deferred and subject only to the requirements of the following WAC sections: Tank Permits and Delivery of Regulated Substances (360-130), Investigation and Access (360-140), Enforcement (360-160), Penalties (360-170), Annual Tank Fees (360-190), Notification Requirements (360-200), Reporting of Confirmed Releases (360-372), and Permanent Closure and Change-in-Service (360-385). Any system included in item 6 of this section shall only be subject to the requirements of the Confirmed Releases section (360-372).

1. Wastewater treatment tank systems not regulated under Section 307(b) or 402 of the Clean Water Act.
2. The UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954.
3. The UST system that is part of an emergency generator system at nuclear power generation facilities regulated by the Nuclear Regulatory Commission under 10 CFR Part 50 Appendix A.
4. Airport hydrant fuel distribution systems.
5. The UST systems with field-constructed tanks.

6. The UST system in excess of 1,100 gallons used for storing heating oil for consumptive use on the premises where stored.

#### 4. PROGRAM ADMINISTRATION AND ENFORCEMENT

##### 4.1. TANK PERMITS

After July 1, 1991, no UST system, as defined in this appendix, shall be operated without a valid permit from Ecology. To be eligible for a permit, the UST system shall be in compliance with all applicable requirements of this appendix or in conformance with a compliance schedule negotiated with and agreed to by Ecology. A temporary permit, valid for 90 days, may be issued if required for volumetric tightness testing used to certify the installation.

To apply for a permit for an UST system which is to be newly installed, the owner and operator shall complete a notice of intent to install an UST system and submit it to Ecology at least thirty days prior to installation of the system. A permit will be issued upon submission of a properly completed installation checklist and the annual tank fee. To apply for a permit for an existing UST not previously reported to Ecology, the owner and operator shall complete a Washington State UST notification form and submit it to Ecology along with a payment of the annual fee and any additional fees that may have to be paid for earlier fiscal years.

In January of each year, Ecology will request owners and operators of reported UST systems to certify compliance with the requirements of this appendix. All UST systems that are in Ecology's notification data base will receive permits by July 1 of each year if adequate documentation has been submitted to Ecology.

An annual state tank fee of \$75 per reported tank shall be paid within 30 days of the billing date and no later than December 31 of each fiscal year. This does not apply to those tanks that are permanently closed on June 30 of the fiscal year preceding the fiscal year for which the fee is assessed.

##### 4.2. DELIVERY OF REGULATED SUBSTANCES

Regulated substances shall not be delivered to any UST requiring a permit unless a valid permit is displayed on the UST or is readily accessible at the facility where the UST is located. This applies only to suppliers who directly transfer regulated substances into USTs. Suppliers shall not deliver regulated substances to any UST which is known to be leaking or to have leaked and not been properly repaired, regardless of the permit status of the tank.

Regulated tanks used to collect and store used or waste oil shall not be pumped by a used waste oil collector unless a valid permit is displayed on the UST or is readily accessible at the facility where the UST system is located.



This does not apply to a one-time removal of substance if the tank is to be properly closed or undergo a change in service. This applies only to used or waste oil collectors who directly transfer regulated substances from USTs.

If a confirmed release occurs from a permitted tank, the owner and operator shall lock the fill pipe and remove the permit from display within 24 hours of the confirmed release. The tank may not receive a regulated substance until all applicable requirements have been met. Ecology may choose to revoke the permit should it determine that reasonable progress is not being made to meet these requirements.

A permit that has been removed due to a confirmed release may be redisplayed to receive product in order to conduct a volumetric tightness test. If a leak is determined to be in the uppermost portion of the tank, the regulated substance shall be immediately removed to a point below the source of the leak. Should the leak be from any other portion of the tank, all regulated substance shall be immediately removed. The requirements for reporting of confirmed releases shall be followed, regardless of the location of the source of the release.

Ecology may request the surrender of a permit for any tank which does not remain in compliance with the requirements of this appendix. The revocation of a permit may be appealed to the pollution control hearings board, pursuant to Chapter 43.21B RCW.

#### 4.3. INVESTIGATION AND ACCESS

If necessary, to determine compliance with the requirements of this appendix, an authorized representative of the state engaged in compliance inspections, monitoring, and testing may require an owner or operator to submit relevant information or documents. Any authorized state representative may require an owner or operator to conduct monitoring or testing of an UST and submit the results to the state.

An authorized representative of the state, with or without notice, may enter a regulated site or the premises where relevant records pertaining to the operation of an UST are kept. The authorized representative may copy records, obtain samples of regulated substances, and inspect or conduct monitoring or testing of an UST system.

#### 4.4. NOTIFICATION REQUIREMENTS

Any owner who intends to install a new regulated UST system shall submit a notice of such intent to Ecology at least 30 days prior to installing the UST system. This notification shall be provided on the appropriate Washington state form, which is available from Ecology.

Notification for several tanks may be provided on one notification form, but notification for tanks located at separate sites shall be reported on separate forms. All the required information shall be completed for each tank reported.

Within 30 days of bringing any newly installed UST system regulated under this appendix into use, the owner shall submit notice of such UST system to Ecology. Owners of existing UST systems regulated under this appendix which have not been reported to Ecology shall provide notification regarding such UST systems immediately. This notification shall meet the requirements of the intent to install notification as described above. Notification for tanks installed after December 22, 1988 shall also certify compliance with the following requirements:

- Corrosion protection of steel tanks and piping as required in this appendix
- Financial responsibility (federal sites are exempt)
- Release detection as required in this appendix.

An exemption to the 30-day intent to install notification is allowed when an UST system is being replaced on an emergency basis. The notice of intent to install the UST shall be made no later than seven days following the installation. A site assessment shall be performed prior to installing a UST or piping if it is installed in the excavation of the tank or piping being replaced.

All owners and operators of new UST systems shall ensure that a licensed installation supervisor certifies that the methods used to install the tanks and piping comply with the requirements of this appendix. Such certification shall be accomplished by completing an installation checklist, which is available from Ecology.

Any changes in the information initially reported to Ecology shall be reported to Ecology on a new notification form within 30 days of such changes. This includes temporary closure on an UST system initially reported as being in use.

Beginning October 24, 1988, any person who sells a tank intended to be used as an UST shall notify the purchaser of said tank of the owner's notification obligations.

#### 4.5. REPORTING AND RECORDKEEPING

Owners and operators of UST systems shall cooperate fully with inspections, monitoring, and testing conducted by Ecology, as well as requests for document submission, testing, and monitoring by the owner or operator. The following information shall be submitted as required to Ecology:

- UST notification forms, including certification of installation for new systems
- Reports associated with suspected releases, confirmed releases, and spills and overfills

- Reports required for corrective actions
- Notification for closure or change-in-service.

All checklists required for regulated tank service activities, site checks, and site assessments shall be submitted by tank service providers or persons registered to perform site checks and assessments.

Records and information shall be maintained to document corrosion protection, UST system repairs, compliance with release detection requirements, site assessments, and corrective actions. Such records shall be kept at the UST site or at a readily available alternative site for inspection by Ecology. Permanent closure records may be mailed to Ecology if they cannot be kept at the site or at an alternative site.

#### 4.6. ENFORCEMENT

The director of Ecology may seek appropriate injunctive or other judicial relief by filing an action in Thurston County Superior Court or issuing such order as the director deems appropriate to:

- Prohibit any threatened or continuing violation of this appendix
- Restrain immediately and effectively a person from engaging in unauthorized activity that results in a violation of any requirement of this appendix and is endangering or causing damage to public health or the environment
- Require compliance with requests for information, access, testing, or monitoring.

Any person who fails to notify Ecology pursuant to the notification requirements of this appendix, or who submits false information, is subject to a civil penalty of up to \$5,000 per violation. Any person who violates this appendix is subject to a civil penalty of up to \$5,000 for each tank per day of violation. Penalties may be appealed to the Pollution Control Hearings Board, pursuant to Chapter 43.21 RCW.

### 5. PERFORMANCE STANDARDS FOR NEW UNDERGROUND STORAGE TANK SYSTEMS

#### 5.1. DEFERRED UST SYSTEMS

No person may install a deferred UST system as defined in Section 3.2 for the purpose of storing regulated substances unless the UST system (whether single-wall or double-wall construction) will prevent releases due to corrosion or structural failure for the operational life of the system. The UST system shall be constructed or lined with material that is compatible with the stored substance and:

- Is cathodically protected against corrosion,
- Is constructed of noncorrodible material,
- Is steel clad with a noncorrodible material, or
- Is designed in a manner to prevent the release or threatened release of any stored substance.

## 5.2. INSTALLATION

All tanks and piping shall be properly designed and constructed with material that is compatible with and impermeable to the stored substance. Tanks and piping shall be properly installed by a licensed tank services provider in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory and in accordance with the manufacturer's instructions.

Owners and operators shall ensure that a licensed tank services provider certifies compliance with paragraph one of this section by submitting a properly completed installation checklist as required in Section 4.4 of this appendix.

## 5.3. CORROSION PROTECTION

Any portion of the system underground that routinely contains product shall be protected from corrosion in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory. Cathodic protection is not required for the following UST systems:

- Tanks are constructed of fiberglass-reinforced plastic or a metal-fiberglass-reinforced-plastic composite.
- Tank construction and corrosion protection are determined by Ecology to be designed to prevent the release or threatened release that may endanger the public or environment.

For tanks constructed of steel, cathodic protection shall be provided in the following manner:

- The tank is coated with a suitable dielectric material.
- The tank is equipped with a factory-installed or field-installed cathodic protection system designed by a corrosion expert.
- Cathodic protection systems are designed and installed to include provisions for testing to allow a determination of current operating status.

- Cathodic protection systems are operated and maintained as specified in this appendix or according to guidelines established by Ecology.

All corrosion protection systems shall be operated and maintained to continuously provide corrosion protection to the metal components of the UST system that normally contain regulated product and are in contact with the ground. The cathodic protection systems shall be inspected for proper operation by a licensed supervisor of cathodic protection installation and testing and tested when they are installed, between one and six months after installation, and at least every three years thereafter. The UST systems with impressed current protection shall be inspected every 60 days. The criteria used to determine that the cathodic protection is adequate shall be in accordance with a code of practice developed by a nationally recognized association.

Records of the operation of the cathodic protection shall be maintained to demonstrate compliance with the performance standards in this section. These records shall include the results of the last three inspections for impressed current applications and the last two inspections for other types of cathodic protection systems.

Corrosion protection shall also be provided for piping that routinely contains regulated substances and is in contact with the ground in accordance with a code or practice developed by a nationally recognized association or independent testing laboratory. Standards for piping are identical to the above standards for tank systems.

#### 5.4. SPILL AND OVERFILL PREVENTION

Equipment shall be provided to prevent spilling and overfilling associated with product transfer to the UST system. Standards for spill and overfill equipment are as follows:

- Spill prevention equipment shall prevent the release of the product to the environment when the transfer hose is detached from the fill pipe (for example, a spill catchment basin)
- Overfill protection equipment shall:
  - a. Automatically shut off flow into the tank when the tank is no more than 95 percent full
  - b. Alert the transfer operator when the tank is no more than 90 percent full by triggering a high-level alarm
  - c. Restrict flow thirty minutes prior to overfilling, alert the operator with a high level alarm one minute before overfilling, or automatically shut off flow into the tank so that none of the fittings located on top of the tank are exposed to regulated substances due to overfilling.

Spill and overfill prevention equipment as specified is not required if alternative equipment is used that is determined by Ecology to be no less protective of human health and the environment than the equipment specified above, or if the UST system is filled by transfers of no more than 25 gallons at one time.

## **6. UPGRADE OF EXISTING UNDERGROUND STORAGE TANK SYSTEMS**

### **6.1. GENERAL**

No later than December 22, 1998, all existing regulated UST systems shall comply with either the standards as set for new UST system performance, standards for system upgrade as defined below, or requirements for closure, site assessment, and corrective action as required.

Steel tanks shall be upgraded by a licensed tank services provider to meet one of the following requirements in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory.

### **6.2. INTERIOR LINING**

Tank linings shall be installed by a licensed service provider in accordance with Section 7.1 of this appendix pertaining to tank repairs. The lined tank shall be internally inspected for structural soundness within 10 years after lining and every 5 years thereafter. Internal inspections are not required if cathodic protection is installed within 10 years of lining the tank.

### **6.3. CATHODIC PROTECTION**

The cathodic protection system shall meet the regulatory requirements outlined in Section 5.3 of this appendix. Prior to installing the cathodic protection, the tank shall be internally inspected and assessed to ensure that the tank is structurally sound and free of corrosion holes. For tanks that have been installed or lined for less than 10 years, integrity may be assumed on the basis of monthly release monitoring over the life of the tank or determined through tightness testing, conducted both prior to installation of the cathodic protection system and between 3 and 6 months following the system installation. Another method of corrosion-hole detection may be used if the method is determined by Ecology to be no less protective of human health and the environment than the methods specified.

A tank may be upgraded by both internal lining and cathodic protection by compliance with all the criteria outlined for both upgrades. An UST system upgraded as such is exempt from periodic internal inspections if the cathodic protection is installed within 10 years of lining the tank.

#### 6.4. PROTECTION OF PIPING

Metal piping that routinely contains regulated substances and is in contact with the ground shall be cathodically protected in accordance with a code of practice developed by a nationally recognized association or independent testing laboratory. Cathodic protection systems for piping shall meet the regulatory requirements outlined here for cathodic protection of tank systems.

#### 6.5. SPILL AND OVERFILL PROTECTION

To prevent spilling and overfilling associated with product transfer, all existing UST systems shall be upgraded to comply with spill and overfill prevention equipment requirements as specified for new UST systems. Prior to transferring a regulated substance to an UST, owners and operators shall ensure that the volume available in the tank is greater than the volume of product being transferred and that the transfer operation is monitored constantly to prevent overfilling and spilling.

### 7. REPAIRS OF UNDERGROUND STORAGE TANK SYSTEMS

#### 7.1. GENERAL REQUIREMENTS

Owners and operators of UST systems shall ensure that repairs will prevent releases due to structural failure or corrosion as long as the UST system is used to store regulated substances. Any repaired UST systems shall be upgraded at the time of repair to meet the requirements of the new or upgraded UST system standards and shall employ an acceptable method of release detection for the tank and piping.

Repairs to UST systems shall be conducted by a licensed UST service provider in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory. Repairs to fiberglass-reinforced plastic tanks may also be performed according to the manufacturer's specifications.

Metal pipe sections and fittings that have released regulated substances as a result of corrosion or other damage shall be replaced. Fiberglass pipes and fittings may be repaired in accordance with the manufacturer's specifications.

#### 7.2. TESTING AND INSPECTION

Repaired tanks and piping shall be tightness tested as outlined in Section 8.4.3 of this appendix within 30 days following the date of the completion of the repair except for the following:

- The repaired tank is internally inspected in accordance with a code of practice developed by a nationally recognized association or an independent testing laboratory.
- The repaired portion of the UST system is monitored monthly for release as outlined in Section 8.4 of this appendix.
- Another test method is used that is determined by Ecology to be no

### 8.3. HAZARDOUS SUBSTANCES

Release detection for UST systems containing hazardous substance shall meet requirements as outlined for petroleum UST systems. By

of at least 21 days. An exception is allowed when extreme snowfall or other travel obstructions occurring in remote locations and preventing access are specifically documented by the owner and operator.

#### 8.4.3. Tank Tightness Testing

Tank tightness testing shall be capable of detecting a 0.1 gal/h leak rate from any portion of the tank that routinely contains product while accounting for the effects of thermal expansion or contraction, vapor pockets, tank deformation, evaporation or condensation, and the location of the water table.

#### 8.4.8. Other Methods

Any other type of release detection method, or combination of methods, can be used if it has detection capability of 0.2 gal/h leak rate or a release of 150 gallons within a month with a probability of detection of 0.95 and a probability of false alarm of 0.5. Ecology may approve another method if the owner and operator can demonstrate that the method can detect a release as effectively as any of the methods described above. In comparing methods, Ecology shall consider the size of release that the method can detect and the frequency and reliability with which it can be detected. If the method is approved, the owner and operator shall comply with any conditions imposed by



monitoring shall be maintained for at least 5 years, except that the results of tank tightness testing shall be retained until the next test is conducted. Written documentation of all calibration, maintenance, and repair of release detection equipment permanently located on site shall be maintained for at least 5 years after servicing work is completed. Any schedules of required calibration and maintenance provided by the release detection equipment manufacturer shall be retained for 5 years from the date of installation.

## 9. RELEASE REPORTING, INVESTIGATION, AND CONFIRMATION

### 9.1. REPORTING REQUIREMENTS

Reporting a release or suspected release to Ecology shall take place within 24 hours. The following constitute reportable situations:

- The discovery by owners and operators or others of released regulated substances at the UST site or in the surrounding area (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface water)
- Unusual operating conditions observed by owners and operators (such as the erratic behavior of product dispensing equipment, the sudden loss of product from the UST system, or an unexplained presence of water in the tank), unless system equipment is found to be defective but not leaking, and is immediately repaired or replaced
- Monitoring results that indicate a release may have occurred, unless the monitoring device is found to be defective. Additional monitoring shall confirm that no release has occurred. If inventory control is the method of release detection chosen, a second month of data shall confirm the leak.

When required by Ecology, owners and operators of UST systems shall determine if the UST system is the source of offsite impacts. These impacts include the discovery of regulated substances (such as the presence of free product or vapors in soils, basements, sewer and utility lines, and nearby surface and drinking waters) that has been observed by Ecology or brought to its attention by another party.

Unless corrective action is initiated, owners and operators shall immediately investigate and confirm all suspected releases of regulated substances requiring reporting within 7 days. Tests shall be conducted by a licensed tank service provider to determine whether a leak exists in that portion of the tank that routinely contains product, or the attached delivery piping, or both. If the test results for the system, tank, or delivery piping indicate that a leak exists, the system shall be repaired, replaced, or upgraded, and corrective action shall be implemented as required.

Further investigation is not required if the test results for the system, tank, and delivery piping do not indicate that a leak exists and if environmental contamination is not the basis for suspecting a release. A site check shall be conducted by a person registered with Ecology if the test results for the system, tank, and delivery piping do not indicate that a leak exists but environmental contamination is the basis for suspecting a release. Measurements for the presence of contamination shall be taken at the location most likely to be contaminated at the UST site. In selecting sample types, sample locations, and measurement methods, the nature of the stored substance, the type of initial alarm or cause for suspicion, the type of backfill, the depth of ground water, and other factors appropriate for identifying the presence and source of the release shall be considered.

If the test results for the excavation zone or the UST site indicate that a release has occurred, corrective action shall be implemented. If the test results for the excavation zone or the UST site do not indicate that a release has occurred, further investigation is not required.

A spill or overfill of petroleum or hazardous substances shall be immediately contained and cleaned up. Such spills and overfills require immediate reporting to Ecology as follows:

- Any spill or overfill of petroleum (along with the results of any related cleanup) that comes in contact with soil, groundwater, or surface water
- Spills or overfills of hazardous substance that comes in contact with soil, groundwater, or surface water
- Spills or overfills of petroleum which are above a de minimis amount but do not come in contact with soil, groundwater, or surface water.

Spills or overfills of petroleum which are above a de minimis amount but do not come in contact with soil, groundwater, or surface water shall be reported with 24 hours.

A release of hazardous substance equal to or excess of its reportable quantity shall also be reported immediately to the National Response Center under Sections 102 and 103 of CERCLA, and to the appropriate state and local authorities under Title III of Superfund Amendments and Reauthorization Act of 1986 (SARA).

Spills or overfills of petroleum or hazardous substances which are below a de minimis amount and do not come in contact with soil, groundwater, or surface water are not required to be reported. A de minimis amount of petroleum is any amount that immediately evaporates or that is specified by Ecology through guidance documents. A de minimis amount of a hazardous substance is any amount that is below the specified reportable quantity under CERCLA.

## 9.2. RELEASE RESPONSE AND CORRECTIVE ACTION

### 9.2.1. Initial Response and Abatement Measures

Owners and operators shall report all confirmed releases required to be reported to Ecology within 24 hours. Immediate action shall be taken to prevent any further release of the regulated substance into the environment and to identify and mitigate fire, explosion, and vapor hazards. All free product shall be absorbed or, otherwise, contained and be properly disposed of.

Unless otherwise directed by Ecology, as much of the regulated substance as necessary, to prevent further release to the environment, shall be removed from the UST system. Any aboveground releases or exposed belowground releases shall be visually inspected and further migration of released substance into surrounding soils and ground water shall be prevented. Monitoring and mitigation of any additional fire and safety hazards posed by vapors or free product that have migrated from the UST excavation zone and entered into subsurface structures (such as sewers or basements) shall be continued.

Hazards posed by contaminated soils that are excavated or exposed as a result of release confirmation, site investigation, abatement, or corrective action activities shall be remedied. If these remedies include treatment or disposal of soils, applicable state and local requirements shall be complied with.

The presence of a release shall be measured at the location where contamination is most likely to be present at the UST site, unless the presence and source of the release have been confirmed by conducting a site check or closure site assessment as required. In selecting sample types, sample locations, and measurement methods, the nature of the stored substance, the type of backfill, depth to groundwater and other factors as appropriate for identifying the presence and source of the release shall be considered. An investigation shall be carried out to determine the possible presence of free product, and free product removal shall be started as soon as practical.

If contaminated soil is found in contact with the groundwater or soil contamination appears to extend below the lowest soil sampling depth, then sampling shall include the installation of groundwater monitoring wells. The wells shall be positioned in such a manner to test for the presence of possible groundwater contamination where it would most likely be present.

Within 20 days following confirmation of an UST release, the owner or operator shall submit a status report to Ecology identifying size and type of release, how it occurred, available sample results, and remedial actions intended or already taken (this report may be provided verbally).

### 9.2.2. Initial Site Characterization

Unless otherwise directed by Ecology, information about the site and the nature of the release shall be assembled. This information includes the following:

- Information gained while confirming the release or completing the initial estimated quantity of release
- Data from available sources and/or site investigations concerning the surrounding populations, water quality, use and approximate locations of wells potentially affected by the release, subsurface soil conditions, locations of subsurface sewers, climatological conditions, and land use
- Results of the site check as required
- Results of the free product investigations as required to determine whether free product shall be recovered.
- A site conditions map indicating approximate boundaries of the property, areas where hazardous substances are known or suspected to be including sample locations
- Results of all completed site investigations and available sample results
- Description of any remaining investigations, cleanup actions, and compliance monitoring which are planned or underway.

Within 90 days of release confirmation, the information collected shall be submitted to Ecology in a manner that demonstrates its applicability and technical adequacy. This report may be combined with the 20-day report if the information required is available at that time.

### 9.3. FREE PRODUCT REMOVAL

At sites where investigations indicate the presence of free product, free product shall be removed to the maximum extent practicable as determined by Ecology while continuing, as necessary, any abatement actions initiated. Free product removal shall be conducted in a manner that minimizes the spread of contamination into previously uncontaminated zones by using recovery and disposal techniques appropriate to the hydrogeologic conditions at the site. Any recovery byproducts shall be properly treated, discharged or disposed of in compliance with applicable local, state, and federal regulations. Abatement of free product migration will be used as a minimum objective for the design of the free product removal system. Any flammable products shall be handled in a safe and competent manner to prevent fires or explosions.

Unless otherwise directed by Ecology, a report of the free product removal shall be included in the 90-day report. This report shall provide the name of the person(s) responsible for implementation of the free product removal measures; the estimated quantity, type, and thickness of free product observed or measured in wells, boreholes, and excavations; the type of free product recovery system used; whether any discharge will take place onsite or offsite during the recovery operation and where such discharge will be

located; the type of treatment applied to and the effluent quantity expected from, any discharge; the steps taken to obtain necessary permits for any discharge; and the disposition of the recovered free product.

#### 9.4. INVESTIGATIONS FOR SOIL AND GROUNDWATER CLEANUP AND CORRECTIVE ACTION PLAN

To determine the full extent and location of soils contaminated by the release and the presence and concentrations of dissolved product contamination in the groundwater, investigations shall be conducted for the release, release site, and any surrounding area which may have been affected. Several factors shall be considered in determining the extent of investigation required: evidence of contamination in groundwater wells, presence of free product requiring removal, and evidence of contaminated soils in contact with groundwater.

The site investigation, reporting, and all cleanup actions shall be completed in accordance with "The Model Toxics Control Act Cleanup Regulation (WAC 173-340)". This includes testing for hazardous substances in the environment where they are most likely to be present. For petroleum UST systems, this includes testing for benzene, toluene, ethylbenzene, xylene, total petroleum hydrocarbon, and lead where leaded gasoline may be present. For other UST systems, testing shall be conducted for any other hazardous substance stored and any likely decomposition by-products where a hazardous substance other than petroleum may be present.

Ecology may require additional investigation and information when needed to select a cleanup action. Owners and operators of UST systems shall conduct a state remedial investigation and feasibility study for sites where the following conditions exist:

- There is evidence that the release has caused hazardous substances to be present in the ground water in excess of applicable standards.
- Free product is found.
- Where otherwise required by Ecology.

The information obtained in the investigation shall be submitted as soon as practicable or in accordance with a schedule established by Ecology.

Subsequent to review of investigation findings, Ecology may require the submittal of additional information or the development of a corrective action plan for response to contaminated soils or groundwater. Corrective action plans shall be submitted according to a schedule and format as required by Ecology.

The corrective action plan will be approved by Ecology only when the plan adequately provides for protection of human health, safety, and the environment. In making this determination, Ecology will consider:

- The physical and chemical characteristics of the regulated substance, including toxicity, persistence, and potential for migration
- The hydrogeologic characteristics of the surrounding area
- The proximity, quality, and current and future uses of nearby surface and groundwater
- The potential effects of residual contamination on nearby surface and groundwater
- An exposure assessment
- Any additional information submitted.

Upon approval, the plan shall be implemented, including any modifications made by Ecology. The results of the plan shall be monitored, evaluated, and reported in accordance with a schedule and format established by Ecology. In addition to the work performed as outlined above, UST owners and operators performing independent cleanup actions shall notify Ecology of their intention to begin cleanup (this can be included with other reports under this section), and comply with any conditions imposed by Ecology.

Unless Ecology directs otherwise, cleanup actions performed by UST owners and operators shall comply with the levels established in WAC 173-340-740. (See Table A-1.)

Within 90 day of the completion of any cleanup action, UST owners and operators shall submit the results of all investigations, interim and cleanup actions and compliance monitoring not previously submitted to Ecology.

For each confirmed release that requires a corrective action plan, Ecology may provide notice to the public. This notice may include, but is not limited to, public notice in local newspapers, block advertisements, public service announcements, publication in state register, letters to individual households, or personal contacts by field staff. Site release information and decisions concerning the corrective action plan will be made available to the public for inspection upon request. Public meetings may be held on the corrective action plan if there is sufficient public interest. Public notice shall also be provided if implementation of the corrective action plan does not achieve the established cleanup levels and if termination of the plan is under consideration by Ecology.

Table A-1. Industrial Soil Cleanup Levels.

HAZARDOUS SUBSTANCE	CAS NUMBER	CLEANUP LEVEL
Arsenic	7440-38-2	200.0 mg/kg
Benzene	71-43-2	0.5 mg/kg
Cadmium	7440-43-91	10.0 mg/kg
Chromium (Total)	7440-47-3	500.0 mg/kg
DDT	50-29-3	5.0 mg/kg
Ethylbenzene	100-41-4	20.0 mg/kg
Ethylene dibromide	106-93-4	0.001 mg/kg
Lead	7439-92-1	1000.0 mg/kg
Lindane	58-89-9	20.0 mg/kg
Methylene chloride	75-09-2	0.5 mg/kg
Mercury (inorganic)	7439-97-6	1.0 mg/kg
PAHs (carcinogenic)		20.0 mg/kg
PCB Mixtures		10.0 mg/kg
Tetrachloroethylene	127-18-4	0.5 mg/kg
Toluene	108-88-3	40.0 mg/kg
TPH (gasoline)		100.0 mg/kg
TPH (diesel)		200.0 mg/kg
TPH (other)		200.0 mg/kg
1,1,1 Trichloroethane	71-55-6	20.0 mg/kg
Trichloroethylene	79-01-5	0.5 mg/kg
Xylenes	1330-20-7	20.0 mg/kg

**Note:** Caution on misusing this table. Method A tables have been developed for specific purposes. They are intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. The tables may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in these tables should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in these tables do not necessarily trigger requirements for cleanup actions under this appendix.

## 10. OUT OF SERVICE UNDERGROUND STORAGE TANK SYSTEMS AND CLOSURE

### 10.1. TEMPORARY CLOSURE

Temporary closure is defined as removal from service for a period of less than 12 months. Operation and maintenance of corrosion protection is required throughout temporary closure. Operation and maintenance of release detection systems is required only if the tank is not empty, empty being defined as no more than 2.5 cm (1 in.) of residue, or 0.3 percent by weight of the total system capacity remaining.

When a system is temporarily closed for 3 months or more, vent lines shall be left open and functioning. All other lines, pumps, manways, and ancillary equipment shall be capped and secured.

Any UST system temporarily closed for 3 months or more shall be tightness tested prior to being put back into service unless the system is subject to and in compliance with release detection requirements.

A UST system which has been temporarily closed for more than 12 months shall be permanently closed if it does not meet the performance standards for new UST systems or the upgrading requirements, with the exception of spill and overfill equipment requirements. An extension of the 12-month period may be granted by Ecology. A site assessment as required for closure shall be completed prior to application for extension.

### 10.2. PERMANENT CLOSURE OR CHANGE-IN-SERVICE

Ecology shall be notified, in writing, of permanent closure or change-in-service at least 30 days prior to beginning closure actions, unless such actions are in response to corrective action. Permanent closure shall be completed within 60 days after expiration of the 30-day notice unless a written request for an extension is approved by Ecology.

Any UST system, not permanently closed by a compliance date that the UST system is subject to, shall be in compliance with the requirements associated with the compliance date. Any UST system not in compliance with such requirements will be subject to all applicable penalties.

For closure, the tank shall be emptied and cleaned by removing all liquids and accumulated sludges. The tank shall be either removed from the ground or filled with an inert solid material. All piping shall either be capped (except any vent lines) or removed from the ground.

Continued use of an UST system to store a nonregulated substance is considered a change-in-service. Prior to change-in-service, the tank shall be emptied and cleaned by removing all liquid and accumulated sludges, and a site assessment for closure shall be conducted.



#### 10.2.1. Site Assessment

Prior to completion of permanent closure or change-in-service, the site shall be measured for the presence of a release where contamination is most likely to be present. Such samples shall be taken and analyzed in accordance with Ecology's guidance document for site assessments or as otherwise directed by Ecology. In the selection of sample types, sample locations, and measurement methods, the method of closure, the nature of the stored substance, the type of backfill, the depth of groundwater, and other appropriate factors shall be considered.

If an approved external release detection method is in operation at the time of closure or change-in-service that indicates no release has occurred, this requirement may be satisfied. The UST owner or operator shall provide a report to Ecology with sufficient information to clearly demonstrate the external release detection was appropriately designed, installed, and operated to adequately detect any releases from the UST system and that no release was detected.

If contaminated soils or groundwater, or free product as a liquid or vapor, is discovered in the assessment, corrective action shall be implemented in accordance with corrective action requirements.

Ecology may direct assessment of the excavation zone and closure in compliance with these requirements for a system permanently closed prior to December 22, 1988, if releases from the UST may pose a current or potential threat to human health and the environment in the judgement of Ecology.

#### 10.2.2. Records Maintenance

Records of excavation zone assessment shall be maintained for 5 years after completion of permanent closure or change-in-service. Records demonstrating compliance with all other requirements for closure or change-in-service shall be maintained as well. If the records are not maintained by the owners and operators who took the UST out of service or by the current owners of the site, they shall be mailed to Ecology.

### 11. LOCAL PROGRAMS

#### 11.1. LOCAL DELEGATION OF UST PROGRAMS

A city, town, or county may apply to Ecology for delegation of authority to enforce, within its jurisdictional boundaries, the state underground storage tank regulations. A fire protection district or political subdivision may enter into an agreement with a city, town, or county to assume all or a portion of delegated program responsibilities. Ecology's approval shall be obtained prior to effective date of such agreement.

## 11.2. ENVIRONMENTALLY SENSITIVE AREAS

Any city, town, or county may apply to Ecology to have an area within its jurisdictional boundaries designated an environmentally sensitive area. If approved by Ecology, the local government agency may impose more stringent standards for operation of UST systems within the environmentally sensitive area.

## 12. REGISTRATION AND LICENSING REQUIREMENTS FOR UST SERVICE PROVIDERS

### 12.1 REGISTRATION AND LICENSING

As of August 1, 1990, only firms that have registered with Ecology shall perform tanks services in the state of Washington. Registration and license application is accomplished by submitting the proper forms and requested information to Ecology.

As of January 1, 1991, only tank services providers who have obtained a license from Ecology may perform the following services on a UST system: installation, retrofitting, cathodic protection installation, testing, decommissioning, or inspection for the purpose of determining compliance with state regulations. The license application will include a list of employees licensed by Ecology to supervise regulated tank services. A licensed supervisor shall be present on site at all times when the above services are being performed. Persons performing sites assessments shall register with Ecology but do not require licensing.

Ecology will offer qualifying supervisor examinations twice a year. An application for a supervisor examination and license shall be submitted to Ecology at least 45 days prior to the examination date.

### 12.2. CHECKLISTS

A checklist shall be completed and submitted to Ecology within 30 days following the completion of any regulated activity. This includes the final site assessment following permanent closure of a UST system. The checklist shall include the signature of the licensed supervisor (registered for site assessments) who oversaw the activity that was performed, the executive officer of the service provider firm, and the owner and operator of the tank. The following checklist forms are available at the regional Ecology offices:

- Installation
- Permanent Closure/Change-In-Service
- Temporary Closure
- Tightness Testing
- Retrofitting/Repair
- Cathodic Protection
- Site Check/Site Assessment

Any firm that installs or retrofits a UST shall submit an as-built site plan showing the UST location, including any adjacent structures. This is to be done on the appropriate form supplied by Ecology or on an 8 1/2-inch by 11-inch single page drawing.

### 12.3. PENALTIES

Any person or firm who violates this appendix is subject to civil penalties of up to \$5,000 for each tank per day of violation.

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## APPENDIX B

The following report formats will be used as guides when preparing the 20-day Site Status Reports and the 90-day Site Characterization Reports. The report formats were obtained at the Washington State Department of Ecology UST/LUST Consultant's Day held July 25, 1991.

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9 3 1 2 9 3 5 9 15 7 2

SITE STATUS (20-DAY) REPORT SHEET

Site owners and operators are required to make a report to Ecology 20 days after confirming a release of a hazardous substance to the environment. Frequently, the initial report will suffice. This report is often made by the consultant or contractor doing the work for the owner/operator. The elements required for this report are detailed in WAC 173-340-450(4)(a). The elements are outlined below so that the user of this sheet can document the performance of these requirements.

Date \_\_\_\_\_

Name of Site Owner \_\_\_\_\_

Site Name \_\_\_\_\_

Site Address \_\_\_\_\_

Ecology Tank Registration Site Number \_\_\_\_\_

Person making this report \_\_\_\_\_

Type of release \_\_\_\_\_

Amounts of release \_\_\_\_\_

Location of release \_\_\_\_\_

How did the release occur? \_\_\_\_\_

24 Hour report? \_\_\_\_\_ Empty the Tank? \_\_\_\_\_

Visual inspection of area to insure no further spread of contamination \_\_\_\_\_

Monitor safety hazards due to vapors \_\_\_\_\_

Reduce the threat to human health & environment from contaminated soils \_\_\_\_\_

Test for hazardous substances \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Free product removal? \_\_\_\_\_

Planned remedial actions \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Results of work accomplished this far \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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## OUTLINE FOR LUST SITE CHARACTERIZATION (90-DAY) REPORT

Due to the amount of information required, this report needs to be in writing.

Name of Site Owner \_\_\_\_\_

Site Name \_\_\_\_\_

Site Address \_\_\_\_\_

Ecology Tank Registration Site Number \_\_\_\_\_

- I. Release description - A narrative describing the type, amount, and location of release, how the release occurred, evidence confirming the release (examples: odors, visual evidence of soil staining, sampling, etc.), actions taken to reduce fire health and safety hazards, and actions taken to reduce the mobility of the contaminants (example: removed product from tanks).
- II. Site conditions map - The map should show the property around the tank excavation, buildings, and other improvements on the property, and natural features such as streams. The map should be annotated to show sampling locations. The map must be accompanied by a table that identifies the sample locations and the results of the analysis.
- III. Available data regarding the possible fate and transport conditions of the contaminant - A narrative describing where did the contaminant go when it was released from the tank? Where is it likely to go? Items to cover [taken directly from WAC 173-340-450(4)(b)(iii)] include:
- a) data on surrounding populations,
  - b) surface and groundwater quality, use and approximate location of wells potentially affected by the release, depth to groundwater, direction of groundwater flow, proximity to and potential for affecting surface water,
  - c) locations of sewers and other potential conduits for vapor or free product migration, and
  - d) surrounding land use and proximity to sensitive environments.
- IV. Results of the sampling - Besides the table mentioned above copies of the laboratory report must be included in the LUST independent action report. This must include the QA/QC data.

- V. Results of the free product investigation. If this investigation results in a negative result, say so and describe the investigation.<sup>1</sup>
- VI. Results of all completed site investigations, interim actions, and cleanup actions, as well as your plans to finish the cleanup, if it is not yet complete.
- VII. Information on free product removal, if any. A narrative describing who, what, when, and how was the free product removed. Items to cover [taken directly from WAC 173-340-450(4)(b)(vii)] include:
- a) Name of person responsible for implementing the free product removal,
  - b) The estimated quantity, type and thickness of free product observed or measured in wells, boreholes, and excavations,
  - c) The type of free product recovery system used,
  - d) The location of any onsite or offsite discharge during the recovery operation,
  - e) The type of treatment applied to, and the effluent quality expected from, any discharge,
  - f) The steps taken and planned to obtain necessary permits for any discharge, and
  - g) Disposition of recovered free product.

---

<sup>1</sup>If groundwater has been threatened or impacted, a remedial investigation and feasibility study (RI/FS) is required. The regulation addresses this possibility in WAC 173-340-450(5). There is another format described in this portion of the regulation on the contents of the RI/FS.

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